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An Account of the
Breeding of Worms
in Human Bodies;

Their Nature, and several Sorts;
Their Effects, Symptoms, and Prog-
nostics. With the true Means to avoid
them, and Med'cines to cure them,

By NICHOLAS ANDRY, M.D.
of the Faculty of Paris.

With Letters to the Author on this Sub-
ject, from M. *Nicholas Hartsoecker* at
Amsterdam, and M. *George Bagliui* at
Rome.

Approved by Dr. *Fagon*, Chief Physician to
the King of *France*, and by the whole Fa-
culty of the Physicians of *Paris*.

Done from the French Original, with Figures.

L O N D O N,
Printed for *H. Rhodes* at the Star the corner of *Bride-
Lane, Fleetstreet*; and *A. Bell* at the Cross-Keys and
Bible in *Cornhil*, near *Sticks-market*, 1701.

TO

*Messire Guy Crescent Fagon,**Counsellor of State,*

AND

Chief Physician to the King.

SIR,

THIS Work is altogether owing to you. If the Sentiments of Gratitude which I always entertain towards you, did not make me sensible of it, the occasion of my

writing it were sufficient to convince me. It is the cure of a Patient who owes his Life to the care I always took to imitate you. For a long time I look'd upon it as a Problem, whether it were convenient to purge in the beginning of a Distemper. But I was soon determin'd when I understood it to be your practice. That confirm'd me in the Doctrine of *Hippocrates*, who recommends Purgatives when the Humors, being in a Ferment, threaten to attack the principal parts of the Body. I had in cure a Patient sick of a Pleurisy, and labouring under a *Delirium*. The Distemper was increasing, I examin'd all the Symptoms of it; and after having observ'd the Signs of *Worms*, and a violent fermentation of Humors, I thought fit to exhibit a Medicine against *Worms*, which at the same time was purgative. I did so, Sir, being perswaded that there was no danger of being mistaken in following your Maxims; which are the Result
of

The Dedication.

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of such a long Experience and profound Meditation. This purgative Medicine being taken before the Concoction of the Humors, was the ready way, according to the opinion of some prejudic'd Persons, to destroy my Patient; but it was so far from depriving him of Life, that it free'd him from a *flat Worm* above four ells long. It was that *Worm*, Sir, of which I presented you the Cut some months ago. I remember you did me the honour then to tell me, that at different times you had seen three such *Worms*; which is sufficient to stop the mouths of some opinionative Persons, who, when they heard of this, ridicul'd it as a Fable. The Circumstance of this Cure, is the occasion of the Treatise I here present you. It shall never be publish'd without your consent, Sir, which I hope you will not refuse me, when you consider that I aim at nothing in it but the Public Advantage; for I know that's the principal motive to prevail with you to approve any Work, as it

is one of the chief Ends of all your Actions. In effect, Sir, when I consider all that you have done, I find nothing but what attests your Zeal for the Public Welfare. When you labour with so much application to advance the Art of Physic, it is because there's nothing pleases you more than to contribute to the greatest Felicity of your Countrymen, by bringing an Art to perfection that has no other End but their preservation. When you send Impostors a packing, Fellows that were never approv'd, and who in a Profession that is altogether charitable of itself, think of nothing but satisfying their own Avarice, it is because you are griev'd that the People, who are of themselves incapable of discerning the Truth, should become the Laughing-stock, or rather the Victim of Falshood. When you make use of the Authority of your Sovereign to hinder certain Facultys of the Kingdom to give Degrees without distinction to

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all

all such as require it, it is because you are not willing that Snares should be thus laid for the Lives of Men, by prodigally conferring the Title of a Science upon ignorant Fellows that know nothing of it. When we see you so careful to preserve the most valuable Health in the World, that to the happiness of *France* is committed to your care, it is because you know that in acquitting your self of such an indispensable Duty, you do thereby insure the Repose and Safety of the State.

In fine, when you protect our Society with so much Goodness, your End in it is, that we may daily render our Schools more and more flourishing. So you explain'd your self, Sir; and it is the Testimony which the Faculty it self gives you in their solemn Thanks, that I translated by their Order with so much pleasure into our Native Language. We may justly say that the Faculty answers your

Intent with success : You see that they apply themselves only to breed Wise, Learned, and Laborious Physicians, who mind the ease of their Patients more than their own Interest. Thus, Sir, their chief Aim is to breed Physicians worthy to follow your steps. They propose to their Scholars no other Model but that Disinterestedness, Generosity, Uprightness, and those Principles of Probity and Religion that are to be observ'd in all your Conduct. They propose to them that lofty Genius, that greatness of Soul, that depth of Education, so honourable in the Eyes of a Prince, who hath worthily rewarded them in you to the satisfaction of his People. They lay before them those Learned Theses, wherein the fineness of your Expression abates nothing of the solidity of your Thought; and wherein both together prescribe the wholesome Rules of an Art, which requires so
* much

much circumspection and prudence. The last of those Theses, amongst others, appear'd to me to be so complete, that after having quoted it in several parts of my Book, I could not forbear translating the whole; not, Sir, that I had any hope of expressing its Beauties, but from a desire I had to give at least a slight Idea of it to those who stand in need of the help of Translations. In a word, the Faculty hath no other Will but yours: They love you as their Protector, and revere you as their Oracle. What I say of the Faculty in general, may be said in particular of all its Members; or if any one of our Number were so unhappy as to prove an Exception, the Faculty would disown him, and not look upon him as one of its Members. I am in no danger of that, Sir; for in our common Design to frame and regulate our selves according to your Pattern, if I am not so able as others to arrive to it, yet

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The Dedication.

yet there's none of 'em that hath more
veneration and deference for your Sen-
timents, and illustrious Person, than I
have. I am, with a profound respect,

S I R,

Your most humble, most obedient,

and most obliged Servant,

Paris I.
Nov. 1699.

A N D R Y.

The

The ANSWER of his Majesty's
Chief Physician.

Versails 24. Nov. 1699.

S I R,

IF I did not invite you speedily to publish the Useful and Learned Work of which you desire my Approbation, I should not only come short of the Character with which you flatter me, but should be very ungrateful if for the Honour I receive by your dedicating the Book to me, I should oppose that which must redound to your Learning and Judgment, by the occasion and manner of your writing this Treatise. There's nothing but the excessive Elogies upon my self in your Epistle which could oblige me to pray you to shorten it; if I could imagine that any Person can think me guilty of so much Vanity as to assume them to my self. I look upon them, Sir, as one of those perfect Ideas,
to

to which we may aspire, but are never able to attain. I am very willing to give a proof of that Zeal which I own I have for the Public Welfare, to suffer you to propose as an Example to those who have a mind to follow it, a Copy that's so unlike me. But I desire at the same time, that I may be truly known by the great Esteem which I have for your Merit, and by the disposition you shall always find in me to give you proofs of it, when there's occasion to publish it for your service. I am assuredly,

S I R,

Your most humble and most affectionate Servant,

FAGON.

Since this Answer, so becoming the Generosity and Modesty of its illustrious Author, repays him with Usury the just Commendations that he refuses; and since it shews at the same time the care that he takes to encourage those who endeavour to contribute any thing to the Public Advantage, I could not resist the temptation of publishing it here, to supply what the bounds of an Epistle would not allow me to say.

The

*The Approbation of Messire Guy Crescent
Fagon, Counsellor of State in Ordinary, and
Chief Physician to the King.*

“ **T**HE Subject of this Book requir’d
“ all the Eloquence, which hath ma-
“ ny times procur’d its Author, on famous
“ Occasions, the just applause of his Hearers.
“ One of the vilest Animals in the World is
“ examin’d here with such noble Erudition,
“ as makes us forthwith lose the *Idea* of its
“ baseness; and all the Disgust which the
“ Matter might cause in us, must give way to
“ the agreeable diversity of Matters of Fact,
“ and the Elegance with which they are re-
“ lated. It were to envy the Public a very
“ useful Pleasure, to deny the printing of this
“ Work, which to me seems as important for
“ the practice of Physic as curious for natural
“ History. Given at *Versails*, Nov. 24. 1699.

FAGON.

*The Approbation of Monsieur Dodart, M. D.
of the Faculty of Paris, and of the Royal A-
cademy of Sciences.*

“ **I** Have read with abundance of satisfacti-
“ on the Book intituled, *Of the breeding of*
“ *Worms in Human Bodys*: Not only because
“ the

“ the principal Subject of the Book is very
 “ well handled, but also because there are in
 “ several parts of it considerable Proposals
 “ for the improvement of the History of Na-
 “ ture and practical Physic: So that I am of
 “ opinion that the publication of this Book
 “ may be very useful to the Public, and that
 “ the perusal of it will be pleasant in propor-
 “ tion to the knowledg that the Readers have
 “ in Natural Philosophy and Experimental
 “ Physic. Given at Paris, Jan. 1. 1700.

DODART.

*The Approbation of M. Bourdelot, Counsellor in
 Ordinary to the King, Chief Physician to the
 Dutchess of Burgundy, and the Lord Chan-
 cellor; Doctor Regent of the Faculty of Phy-
 sic at Paris, deputed by the Lord Chancellor to
 examine this Book.*

“ I Have read, by order of the Lord Chan-
 “ cellor, and with abundance of satisf-
 “ faction, this Manuscript, intituled, *Of the*
 “ *breeding of Worms in Human Bodys.* At
 “ Seve, Sept. 30. 1699.

BOURDELOT.

*The Report of Monsieur Berger, Censor and
Antient Dean of the Faculty of Physic at
Paris.*

“ **I** Find Mr. Andry's Book, concerning
“ *the Breeding of Worms in Human Bo-*
“ *dys*, so Elegant and full of Learning, that I
“ am of opinion, it will be as well received
“ of the Public, as it hath been satisfactory to
“ me in the perusal. Dec. 2. 1699.

BERGER.

*The Report of M. Saint-Yon, Physician in Or-
dinary to the King, Doctor Regent of the Fa-
culty of Physic at Paris, and Professor of Chy-
mistry in the King's Garden.*

“ **R**ICH People eat and drink so unrea-
“ sonably, and the Poor live so misera-
“ bly, that it is impossible but a very great
“ quantity of Worms of all sorts must breed
“ both in one and t'other. The Treatise which
“ Mr. Andry, my Brother of the Faculty,
“ hath written upon this Subject, is so full of
“ Learning, so neatly writ, and is so full of
“ curious Enquiries, and good Receipts, that
“ after having read it attentively, I wish it
“ were publish'd as soon as possible. At Pa-
“ ris, Dec. 4. 1699. De Saint-Yon.

The

The Report of Monsieur Maillard, Doctor Regent of the Faculty of Paris.

“ **T**HE manner in which Mr. Andry
“ does here explain *the breeding of*
“ *Worms in a Human Body*; the different
“ Causes and Signs that he gives us with so
“ much exactness; the prudence with which
“ he prescribes us the Medicines; his Enquiries and curious Observations upon that Distemper, are sufficient to show that the
“ Book is worthy of the Pen of the Author,
“ of the Reading of the Learned, and of the
“ Approbation of the Doctors of Physic. At
“ Paris, Dec. 3. 1699.

MAILLARD.

The Report of Mr. Tournefort of the Royal Academy of Sciences, Doctor of Physic of the Faculty of Paris, and Professor of Botany in the King's Garden.

“ **T**HE Treatise of *the breeding of Worms*
“ *in a Human Body, &c.* compos'd by
“ Mr. Andry, Doctor of Physic of the Faculty of Paris, contains a very solid Doctrine,
“ founded upon what's most certain in Nature
“ concerning the Generation of Worms; supported by a great number of very exact
“ Observations.

“ Observations upon the Distempers they
“ produce, and confirm’d by the Experience
“ of several special Remedies proper for the
“ curing them. *Paris, Decemb. 6. 1699;*

T O U R N E F O R T,

The Report of Mr. Tauvry, of the Royal Academy of Sciences; Doctor of Physic of the Faculty of Paris.

“ I Have read with pleasure the Book Of
“ *the Breeding of Worms in Human Bodys,*
“ compos’d by Mr. *Andry*, Doctor of the Faculty of *Paris*, wherein I have found a
“ great deal of Exactness and Learning. The
“ Matters of Fact therein related may be of
“ great use to Physicians: For besides that the
“ Author neatly discovers the Causes and
“ Signs of the Distempers that are accompanied with Worms, he joins very judicious
“ Reflections upon the Medicines we ought
“ to make use of. The Explications he gives
“ us, and the Observations of the Moderns
“ that he relates, render this Work as curious
“ as profitable. *At Paris, Nov. 18. 1699.*

D. T A U V R Y,

The

The Licence from the Dean.

WE Physician in Ordinary to the Dut-
chefs of Burgundy, Dean, Doc-
tor Regent of the Faculty of Physic of Paris,
having heard the Report of Messieurs Ber-
ger, De Saint-Yon, Maillard, Tour-
nefort, and Tauvry, also Doctors Regents
of the said Faculty, deputed by them to ex-
amine a Book intituled, Of the breeding
of Worms in Human Bodys, writ by
Mr. Andry, Doctor likewise of the same
Faculty, consent that it should be printed.
Given at Versails, Dec. 27. 1699.

BOUDIN Dean.

AT the close of the Volume there are three Letters that were writ to me upon the Subject of Worms: The two first from *Amsterdam* by M. *Hartsoeker*, and the last from *Rome* by M. *Baglivi*, Author of the Book *de Prax. Med. &c.* Since these three Letters are recommendable, not only because of the Merit of the Authors, but for the Manner in which they are wrote, and the Matter that they contain, I thought my self oblig'd to make them public. I have made use of those of M. *Hartsoeker*, to confirm some places of my Book. I could not reap the same Advantage from M. *Baglivi's* Letter, because it did not come till after the printing of my Treatise. I should not have fail'd, had it not been so, to have spoke of it in the 8th Chapter, where I relate the Experiences that he hath set down in his Book, and which he explains to me in particular in his Letter. I should have had several Reflections to have made upon the curious Matters of Fact that he hath imparted to me, as well as upon the natural manner in which he explains the Breeding of Insects; upon the clear Reasons he gives for the length of the Flat Worm, upon what he says of the Formation of Animals in the *Fætus*, and upon several other important Matters, which make that Letter very well worth the reading.

I Would pray the Readers not to begin the perusal of this Work, till after they have read what I say of the Occasion that made me write it, and of the Design I therein propos'd to my self.

The

The Occasion and Design of this Work.

THE Work is owing to an Occasion which I cannot forbear to impart to the Reader. On the 4th of *June* 1698. I was sent for to the House of *M. Chaillou* a Merchant, in *St. Denis-street, Paris*, there to see a young Man of twenty nine or thirty years of Age, called, *Jacques Frequet*. He was that same day seiz'd with a violent Feaver, accompanied with a great pain in his side, a spitting of Blood, and great difficulty of breathing. I began immediately by opening a Vein, which I order'd to be repeated next day. On the third day I brought him to sweat, which gave him considerable ease. On the 4th day he seem'd to be much better, but from the fourth at night to the fifth, he had a *Delirium* in his Brain, which went off about seven in the Morning. I observ'd that that *Delirium* was not preceded by any of the Signs which use to foretel that Symptom in other Distempers. This oblig'd me to examine, if there were not in this case some Signs of Worms. I found a great many in his Excrements; upon which occasion on the next day, the sixth of his being taken ill, instead of

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having

having recourse again to letting Blood, as the case seem'd to require, since the Patient was attack'd with a Pleurisy; and without observing the dangerous practice of those who will never give a Purge in the beginning of a Distemper, I order'd him, contrary to the advice of some Persons, whom it is not my design to censure here *, a purging draught, with which I had formerly brought away extraordinary Worms.

The Patient, an hour after taking the Potion, found something stir in his Body. This Motion continued for two hours, and determin'd in the issuing of a live Worm, four ells three inches long, without coming away whole. It was extreamly white, flat like a Ribbon, distinguish'd into several Joints, having Head, Eyes, &c. such as is represented in the following Figure.

Since I had formerly, and by Med'cines against Worms, cur'd abundance of Distempers, of which no Man would have readily believ'd Worms to have been the cause; and that amongst the Worms that I had brought away from my Patients, there were several of the same nature with this: I was of the mind that a Treatise upon Worms would not be useless; and so form'd the design of the Work I now publish. This is what I

* *Neminem nomino, quare irasci mihi nemo poterit, nisi qui ante de se voluerit confiteri. Cicer. pro lege manilia.*

have to say as to the occasion of the Book.

Besides, some able Men having seen the Cut of the Worm that hath been publish'd several months, they look'd upon it as fabulous; others who were Witnesses to the Fact, reckon'd it to be certainly a Monster, and spread a Report, that I had brought away from my Patient such an Animal as was never seen. Both of 'em were equally mistaken; I gave notice to the former, that I preserv'd the Worm by me, so that they might satisfy themselves of the truth of it when they pleas'd; and further, since the Patient who voided it is well at present, and of Age to answer for himself, I might say to them as the Friends of the blind Man in the Gospel said to the Jews, *Ask him, he is not a Child, he will answer you himself.* The latter will see in this Work, that the Insect here treated of is not so extraordinary, and that this sort of Worm was known to the Antient Physicians, amongst others to *Hippocrates* and *Aristotle*; and that the Books of the Moderns have several Instances of such. I add, that M. *Fagon* his Majesty's Physician in Chief hath told me, that he hath seen three Worms of this sort at different times. Here they will also be inform'd, that this Worm is common in *Holland*, where there have been seen of them much longer than this, as M. *Hartsoeker* writes to me from *Amsterdam*.

xxiv *The Occasion and Design*

Moreover, it is not the first time that this sort of Worm hath been accounted Monstrous. We find, by a Letter from M. *Fabricius*, inserted in this Book, that at *Payerne*, a Woman having voided such a Worm, it was immediately reported through *Suisseland* and *Burgundy*, that a most frightful Monster was come from out of the Woman's Body. This Monster was every where talk'd of, and call'd, *The Monster of Payerne*. Thus you see how some refuse to believe every thing that seems extraordinary; and how others please themselves by aggravating Matters beyond the Truth. Before I brought away this Worm, I had brought away others of the same nature from several Patients, as I just now observ'd; but they were lost by the negligence of Nurses that had imprudently thrown them away. It had been the same as to this, had it not been for M. *Dupaty* a Chirurgion in the Street *Briboucher*, who being with the Patient, hinder'd their throwing away the Worm, and gave me notice of it. I view'd this Insect in the presence of several Persons; and having measur'd it with an Ell, we found it four Ells three Inches long, without the Extremity or Tail of it which remain'd in the Patient's Body, because being too impatient, he pull'd out the Worm and broke it; which could scarce happen otherwise, for when a Worm issues of its self, and is touch'd, it immediately enters again, which is the occasion

that it usually breaks, when they go to pull it by force. This is seen every day in Earth-worms.

I repeated the Potion two days after, and the remainder came away, but could not be measur'd, because being separated from the Head, it could not stay long in the Body without corrupting.

When I first saw this Insect, I thought it to be that they call *Tania*, which never moves *, and on which we can never discern any Head tho it be intire; but this mov'd mightily, and I perceiv'd it had a Head with four Eyes. M. Mery of the Academy of Sciences, who has since examin'd this Worm, alledges, that what I took for Eyes, are Nostrils, which I shall consider elsewhere. I perceived the Neck to be very slender, the Joints of which did at first almost touch one another. The Body was long, growing broader towards the middle of its extent, and its Joints were distant an Inch from one another.

In a word, instead of the ordinary *Tania*, we saw, as we shall observe afterwards, another sort of *Tania*, call'd in Latin *Solium*, and in French the *Solitaire*, of which several Authors speak, which breeds in the Body of a

* Platerus duo *Taniae* Intestinorum genera constituit, unum quod rectius *Tania* Intestinorum quam *Lumbricus* latus appellatur, cum nec vivat nec loco moveatur uti *Lumbricus*. Sennert. lib. 3. p. 2. cap. 5.

great many People, and keeps there with so much obstinacy, that without a particular Medicine to force it away, it grows old with the Man, says *Hippocrates*, and accompanies him to his Grave. It is rare to see any of that sort of Worms have Heads, because the Head being join'd to a very slender Neck, is easily separated from it, and remains in the Body of the Patient: Therefore the Head of this makes it the more observable.

The Worm mov'd about mightily for five hours, and liv'd above twelve: The Patient found himself better as soon as he was deliver'd from it. The next day being the 7th after his being taken ill, his Fever was gone, and the day after the Cure was compleated, I must not forget to observe, that the Worm came away knotted in the middle; whence we have reason to judg, that it made many turns before it came away, and that the Patient before he voided it, could not fail of being sensible of its Motions, as I have already mention'd.

As some Persons have treated this Worm as a Fable, as has been observ'd they did: So others have been of the opposite Extreme, and said, 'twas a thing that did not deserve the least notice. Being willing to believe that they speak as they think, and that there's nothing of ill-will in what they say; I would pray those that speak thus, to cast their Eye upon this Treatise, where they will see how
former

former Physicians have carefully observ'd such passages when they happen'd; how *Will. Fabricius*, *Philibert Sarrazenus*, *Amatus Lusitanus*, *Spigelius*, *Tulpius*, &c. describe them to us with their minute Circumstances. And how *Fabricius* speaking of such a Worm, says, he keeps it in his Closet amongst his Curiosities*. Here they may be inform'd, by the Example of the most Learned Physicians, that we cannot make too many Observations in Physic, and that that which many times does not seem worthy the Curiosity of some Peoples Eyes, is at the same time very much regarded by the Learned. I speak this, because I am of Opinion, that when we write for the Public, we are as much oblig'd to correct the Mistakes of those that have not much knowledge, as to satisfy those who have most†.

Some People wonder most of all, that I have caus'd the Figure of such a vile Insect as a Worm to be engrav'd, and that I have observ'd all the Particularities of its Structure; but certainly they don't consider what *Pliny* says || :

* Ego Lumbricum hunc exsiccatum inter rara mea reservo. *Cent. 2. Obs. 70.*

† Sapientibus & insipientibus debitor sum. *Paul Rom. Cap. 1. v. 14.*

|| Turrigeros Elephantorum miramur humeros, Taurorumq; colla, & truces in sublimo jactus, Tigrium Rapinas, Leonum Jubas, cum rerum Natura nusquam magis quam in minimis tota sit. Quapropter quæso ne hæc legentes, quoniam ex his spernunt multa, etiam relata fastidio damnent, cum in contemplatione Naturæ nihil possit videri supervacuum. *Plin. Hist. Nat. l. 11. c. 2.*

xxviii *The Occasion and Design*

That it is many times in the vilest Insects that Nature appears most intire; and that when we are about contemplating Nature in a due manner, there's no Circumstance too little. I advise them to make use of the Words of the same Author, not to be altogether sway'd by their Opinion, in what may be displeasing to them in such particulars, there never being any thing superfluous in what serves to make us understand Nature. As to the engraving of the Worm, I have in that followed the Example of *Spigelius*, *Sennertus*, *Fabricius*, *Tulpius*, &c. who made the Flat Worms that they saw, to be carefully drawn, to the end that if they were different from some others of the same kind, they might easily inform themselves of it, by comparing the Figures. This is just the thing that hath happen'd on this occasion, where we shall find this Figure much different from that in *Spigelius*, and from that which I have exhibited here at the close of the Book, Figure 9. that is given us by *Sennertus*; and that of another left by *Fabricius*, marked here Fig. 15. And of another that is found in *Tulpius*, the Head of which is formed like the Snout of a Fish, and larger than the rest of the Body, as well as the Neck, as we see it represented Fig. 16. which differs much from our Worm; in which, on the contrary, the Head and the Neck are smaller than the rest of the Body; and the Head observ'd by a Microscope, resembles that of a *Bull-dog*.

Since

Since the Worm we speak of is usually in the Body of a Man, and yields to none of the ordinary Med'cines which kill other Worms, and is the cause of a great many Distempers; It concerns too many Persons to know how to deliver themselves from it; for me to make a Myſtery of the Med'cine of which I have made use with ſo much ſucceſs on this occaſion, as well as on many others: Therefore I here advertiſe my Reader, that I give a faithful account of it in an Article on purpoſe, where I ſpeak of Med'cines againſt Worms.

What I propoſe here is, to write a compleat Treatiſe upon Worms, to explain how they breed in us, to give an account of all the different ſorts of 'em, and to declare their Signs, Effects, and Prognostics; to obſerve the beſt Med'cines againſt that Diſtemper, to ſhew that thoſe Animals occaſion or entertain many Diſtempers in our Bodies, and that there are Pleuriſies, Phtiſics, and Jaundices, that cannot well be cur'd but by Med'cines that make us void Worms; of this I have given abundance of Examples in this Book. I might quote here abundance more which I have been witneſſes of ſince it was printed; and without ingaging my ſelf in Particulars, it's very well known how a Prince hath been lately cur'd, whoſe Health ought to be valu'd by all ſuch as are capable of being affected by Virtue, Learning, and all manner of Wit. On the 15th of Octob. 1699. after long and frequent

quent Watchings in the study of the Fathers, he fell sick of Bile spread all over his Body, accompanied with a considerable Feaver, and great pain in his Intestines. He neglected his Distemper to the 18th of the same month, so that he was oblig'd to give over reading, and to ask me by what Methods I could restore him to his Health, so as he might pursue his Studys. The first thing I thought on, was to have recourse to a Water which *Hippocrates* in his * third Book of Diseases, recommends as an universal *Aperient* and Cordial. † And *Luke Tozzi* in his Commentary upon the Aphorisms of that Author, doth reasonably look upon it as the best of all Remedies against all sorts of overflowing of Bile, of what nature soever. This Water he calls *ex Albo albi*; and it is in effect so prevalent against the Jaundice, provided it be us'd for some days, that I don't believe, after the Experience I have had so long of it, there is a more infallible Remedy. Some days after I made use of purging Med'cines; but the pain of his Intestines continuing, I doubted not, but what I had often observ'd

* Ὡν καὶ λευκὸν τριῶν καὶ τετάρων κατακυχῶν ἐν ὕδατος χαλκῷ πνέτω τὸ ὅσον ψυχρὸν φρόδρα, καὶ τὴν κοιλίαν υπαγεῖν τὸ νοσούντα περικατακύνει. Ἰωανν. περὶ νοσῶν. γ.

† Hæc autem manè & Vesperè, jejuno Stomacho, ad uncias quatuor pluries exhibita, mirum quàm tutò, feliciterq; icterum quemcumque sanat, etiam ubi cætera non profecerint, quod sane nullies expertum. *Luce Tozzi* Neapolit. in *Hippoc. Aphor. Comment. Lib. 4. Aph. 62. in fine.*

in those sorts of Distempers, was also in this, I mean Worms. I made my Prognostic of it, which was justified by the Event; for having given him a Med'cine against Worms, he voided about thirty; some of them alive, some dead; some yellow, some red, and others livid: I took two of them that I put into a Microscope, where I perceiv'd they voided a Liquor as white as Milk, which was without doubt the Chyle that they were full of. No sooner were those Worms voided, but the pain in the Guts ceas'd. This Distemper decreas'd afterwards every day, and soon after the Fatigues of a long and famous public Act, sustain'd with much Strength and Reputation, were the Marks of a perfect Cure.

I don't confine my self in this Work to the Worms of the Intestines, I speak of all those to which the different parts of the Body are subject. I have taken care to avoid all the Fables that People are accustomed to make use of on this Head, and to relate nothing but what is worthy of being believ'd by the most understanding sort of Readers: For, by the way, there are daily made 100 different Stor-ys of Worms, which being closely examin'd, are found to be very far from Truth. I have seen many Instances of it: Amongst others this is one, to which I was witness not long ago, and which it will not be amiss to give an account of. In St. Denis-street, near the Church of St. Opportune, Mr. Perdrigeon, a Tapstry-

Tapestry-seller, had a little Girl that they thought to be troubled with Worms. This Child, about an hour after having voided a Glyster, was carried to the Fire; she had scarcely stood a moment, when they saw at her feet a very extraordinary Insect that crept upon the floor: There needed no more to perswade them that the Girl had voided the same, and that it was the effect of the Medicine. People were called in to view this Animal, which they thought to be very like a Crab. Immediately all the Neighbourhood had it, that the Girl had voided a Crab. The Apothecary who made up the Glyster, gave me notice of it immediately. Just as I was making me ready to go to the Child's Parents to know the truth of the Fact, I had word brought me that they had thrown the Insect into the Fire: This occasion'd my referring the examination of the matter till further leisure. Some weeks after, being the 30th of July, 1699. I went to see her Friends, who told me that they had some days before discover'd among the Wood which they had heap'd in a Cellar, Animals like the former; and that when that Insect was found in the Chamber, they had just brought Wood from the Cellar to lay on the Fire. This immediately satisfy'd me as to the falshood of the Report that had been spread about, and so much the more, that by the description they had given me of this Insect, it appear'd plain

to me, that 'twas one of those that had been found amongst the Wood, which have two Horns on their Head, two Prickles on the Tail, four pretty large Paws, and a Body covered over with Scales.

I don't only avoid all suspected Storys, but, as I here give a Description of several Medicines, I took care to give an Account of none that were doubtful, In fine, I endeavour to ascertain nothing without examining it well before-hand, being of opinion with *Pliny* the Younger, that we cannot be too exact when we are to publish any thing *. That I might be the more capable of observing this exactness in every thing that concerns this Book, I have endeavour'd to avoid being headstrong in any Opinion, and thought that I ought to regulate my self very much upon what *Galen* says; That in his time Physic could not be arriv'd to its Perfection, because it cannot do so but by a great number of Observations made from Age to Age; that those who were first could not both begin and make an end; and that it is the part of Posterity to enlarge by new Discoveries upon the Foundation of their Ancestors †.

* Nihil curæ meæ satis est, cogito quàm sit magnum dare aliquid in Manus Hominum. *Plin* Lib. 7. Epist. 126.

† Et si nemo nostrum sufficiat ad Artem constituendam, & absolvendam, satis tamen videri debet, si quæ multorum Antæcessorum spatio priores invenerint posteri accipientes, atque his addentes aliquid, illam aliquando compleant atque perficiant. *Galen* in Commentario, Aph. 1.

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Page 28. I have said, in speaking of Co-
cheneal, that the Tree from whence it comes,
breeds little Worms at the same time in that
Cod. Some Persons perhaps will stumble at
my calling Cochineal a *Cod*, instead of cal-
ling it a *Seed*, and will alledg that here I fail
of that exactness which I pretend to search
after. But I say, that they who take Co-
chineal for a Seed, are mistaken; it is a Cod
formed of the Juice of a Plant by the biting
of a Worm, as it happens to the *Kermes*; as
to which it may not be unprofitable to ob-
serve, That a Worm of the like nature, bit-
ing the Leaves of the Oak, and inclosing it
self within the Juice that comes out of it,
gives rise to the false Gall-nuts that are found
upon them; that that which is called the
Oak-Apple is also form'd of the Juice of the
small Branches that Worms have bit; that the
same thing produces the *Bedeguar Arabum*,
or the Sponge of the *Eglantine* or Sweet-
briar, and the Excrecence which grows
upon Thistles amongst Oats, which some car-
ry about 'em as a Remedy against the Piles.
The Ground-Ivy is many times full of such
Bumps, in which, as in all the former, there
are found Worms, or the holes by which
they issued, when the place that was gnaw'd
heals up at last, and does not furnish those
Worms the Juice that they crav'd.

Page 105. I could not forbear saying some-
thing as to the abuse that some People make
of

of the Doctrine of *Acids* and *Alcalis*, since there are some who may conclude from thence, tho without any ground, that I declare my self against that Systeme, which would not be a proof that I desir'd to write without prejudice according as I pretend. I think fit to take notice here, that they who read that place with attention, will see that I mean none but some Sciolists, who not knowing the System of *Acids* and *Alcalis*, which is one of the finest and most certain in Physic; when well understood, apply every thing to it without examination.

I said something, Page 107. which may give occasion to some prejudic'd Readers, to believe that I mean to cry down letting of Blood. That I may omit nothing which exactness can require of me, I am very well satisfy'd to declare, that my design is not in the least to condemn that Remedy, and that on the contrary, I look upon it as one of the best in Physic, provided it be managed with that Prudence and Wisdom that *Galen* requires, for we must not think that Author guilty of the excess in that Matter which his Enemies accuse him with so unjustly; after what he says on that Subject in so many places of his Books.

As for Example;

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1. (a) That neither Children nor old Men ought to be let Blood, how great soever their Distempers might be, *etiamsi validis laborent aegritudinibus.*

2. (b) If a Child be attack'd with a putrid Feaver before the Age of fourteen, letting Blood is not convenient for them. If it be after that Age, enquiry ought to be made if it be lean, firm, of a hard flesh, and whether it abound with Blood; if not, it must not be let Blood neither.

3. If the Person they would let Blood be above thirty years, but hath a soft Fat, weak, white Body with small Vessels, it is not proper to let him Blood, or at least very little, especially in the Summer.

4. That neither (c) the putrefaction of the Humors, nor Obstructions, are cur'd by being let Blood.

5. (d) That when the Patient has but a small quantity of good Blood, we must abstain from letting Blood.

6. (e) That the Effect of the Remedy is sometime to spoil our Complexion, to wea-

(a) *Galen* Com. 4. de rat. vict. 19. & 8. Meth. Cap. 4. de curandis febribus Sermonem habens, ait, at siquidem vel puer, vel Senex sit, sanguinem detrahare non licet. Idem repetit. 1. de art. curat. ad Glauc. c. 14. Libr. de cur. rat. per sang. miss. cap. 6. 9 & 13.

(b) 11 Meth. cap. 14.

(c) Ibid.

(d) *Galen* 4. de San. tuenda. cap. 4.

(e) 12. Meth. c. 1.

ken our Strength, and hinder our Recovery.

7. (a) That in very hot Countrys, letting Blood is dangerous, and is not fit even in Pleurifies. (b) That in Countrys too cold we must likewise abstain from it.

8. (c) That Physicians have almost constantly kill'd their Patients by letting them Blood, without any regard to the change of Times and Seasons.

9. (d) That in a Plague which rag'd in his time, and was occasion'd by bad Food, most of those that were let Blood died.

I say, after all these Advertisements, we cannot well accuse *Galen* of having been unreasonably addicted to letting of Blood.

There are in the Books of that Author several other places which justify him intirely against all their Reproaches on this Head, but this is not a place to repeat them.

I am something dissatisfied with the word *Aphorisms*, which I have given as the Title to the last Chapter of this Treatise. I am apprehensive that some will think me too bold in making use of that Word for any thing of mine, since it seems only to belong to one of

(a) 3 Epidem & 15 Meth. cap. 8. ubi id speciatim de Roma refert.

(b) 1 de Arte cur. ad Glauc. cap. 14.

(c) Ibid.

(d) Lib. de cibis boni & mali Succ.

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the most excellent Books we have: I think my self therefore oblig'd to say, that if I have made use of it, it is not out of design to compare my self with *Hippocrates*, but because this term seem'd to me to agree better than any other to Maxims of Physic.

Amongst those Maxims there are some that I would have cut off as being well enough known: Yet I have left them, because I thought that mixing them with others, was the ready way to engage the Readers to more attention. In effect it many times happens that what we know, becomes useless to us for want of Reflexion; so that it is no less convenient to be sometimes put in mind of what we know already, than to be instructed in what we know not.

This Treatise contains Twelve Chapters, which it's fit should be read successively one after another because of their connexion. In the first I shew what a Worm is, and what is to be understood by that Word. In the second I give an account how those Animals are bred in us. I examine the Species of Worms in the Third, and their Effects in the Fourth. In the Fifth I give the Signs of that Distemper. In the Sixth I shew the way to guard our selves against them. The Seventh contains the Circumstances that are to be consider'd in voiding those Insects, and the Prognostics that we ought to draw from thence.

thence. The Eighth Chapter treats of the danger of certain Med'cines that are ordinarily made use of against Worms, which we are carefully to avoid. In the Ninth we have an account of what is fit to be done in order to make them come away, of what sort soever they be. The Tenth contains Precautions that are to be observ'd in taking Med'cines against Worms. In the Eleventh, I treat of certain Worms call'd *Spermatic*, of which 'tis very probable all Animals are form'd. The Twelfth consists of some Aphorisms that are, as it were, a Recapitulation of the Work, and at the same time may serve as a Supplement, and Illustration of it.

This is the Design and Nature of the Book. The Volume may perhaps seem a little too big, but the Work is not too long, for that I keep close to the Matter in hand; and when an Author does so, I never think him too long. It is the observation of *Pliny the Younger*, in the close of a Letter *, where he spreads several Pages in describing his Country-House: "Provided, says he to his Friend, that the description I have just now given you, con-

* *Sciat Scriptor, si materiæ immoretur non esse longum, longissimum si aliquid accersit, atque attrahit similiter nos quum totam villam oculis tuis subicere conamur, si nihil inductum & quasi devium loquimur, non Epistola quæ describit, sed Villa quæ describitur, magna est. Plin. jun. Lib. 5. Ep. 101. in fine.*

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“ tains nothing but what belongs to my Sub-
“ ject, It's not my Letter, but my House
“ that you ought to complain of as too big.
I say the same of this Book. Provided I have
mix'd no foreign Matter, and that every thing
in it agrees to what I design'd to write: It is
not the Treatise, but the Matter that ought to
be accus'd of being too long.

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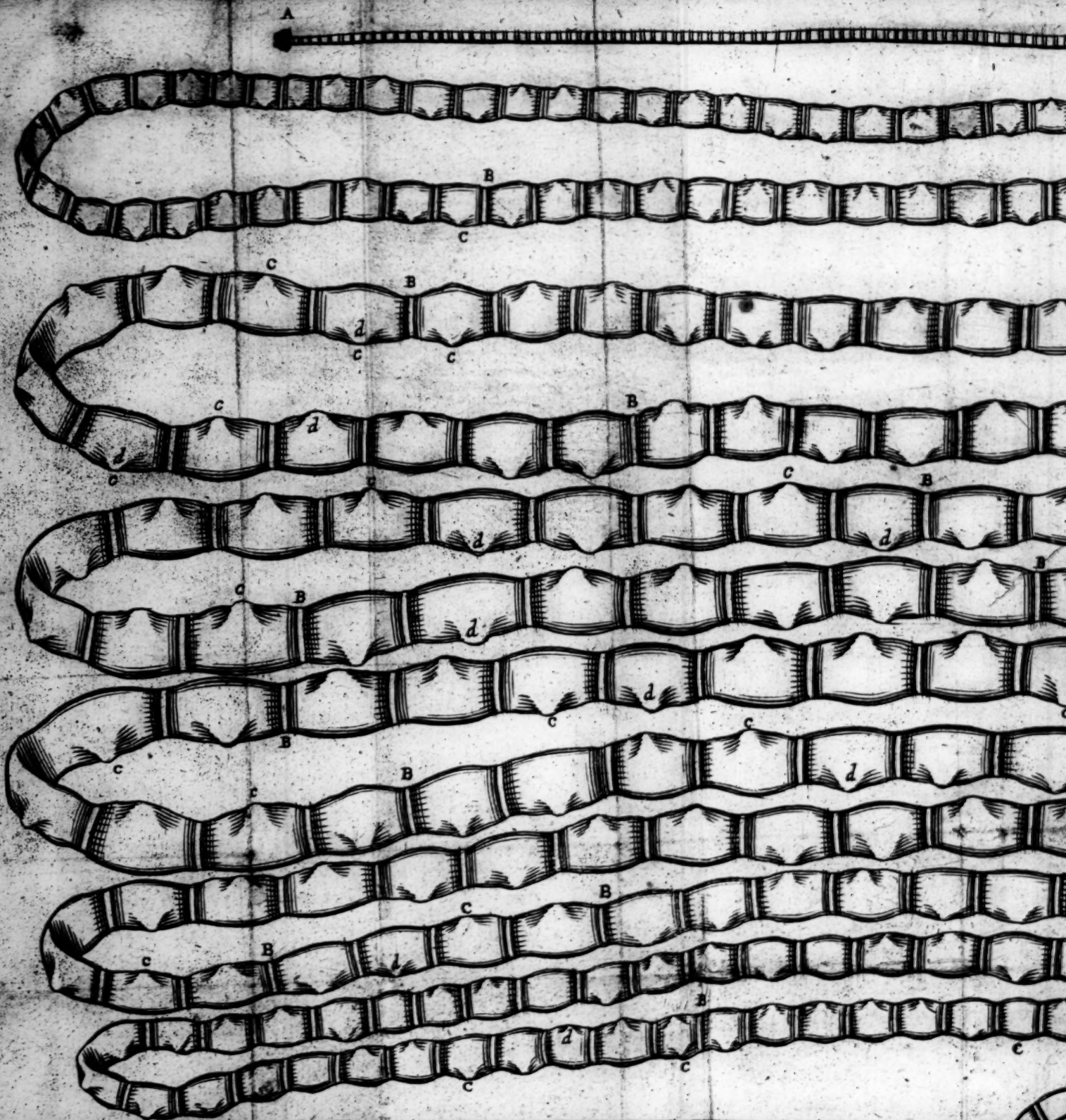
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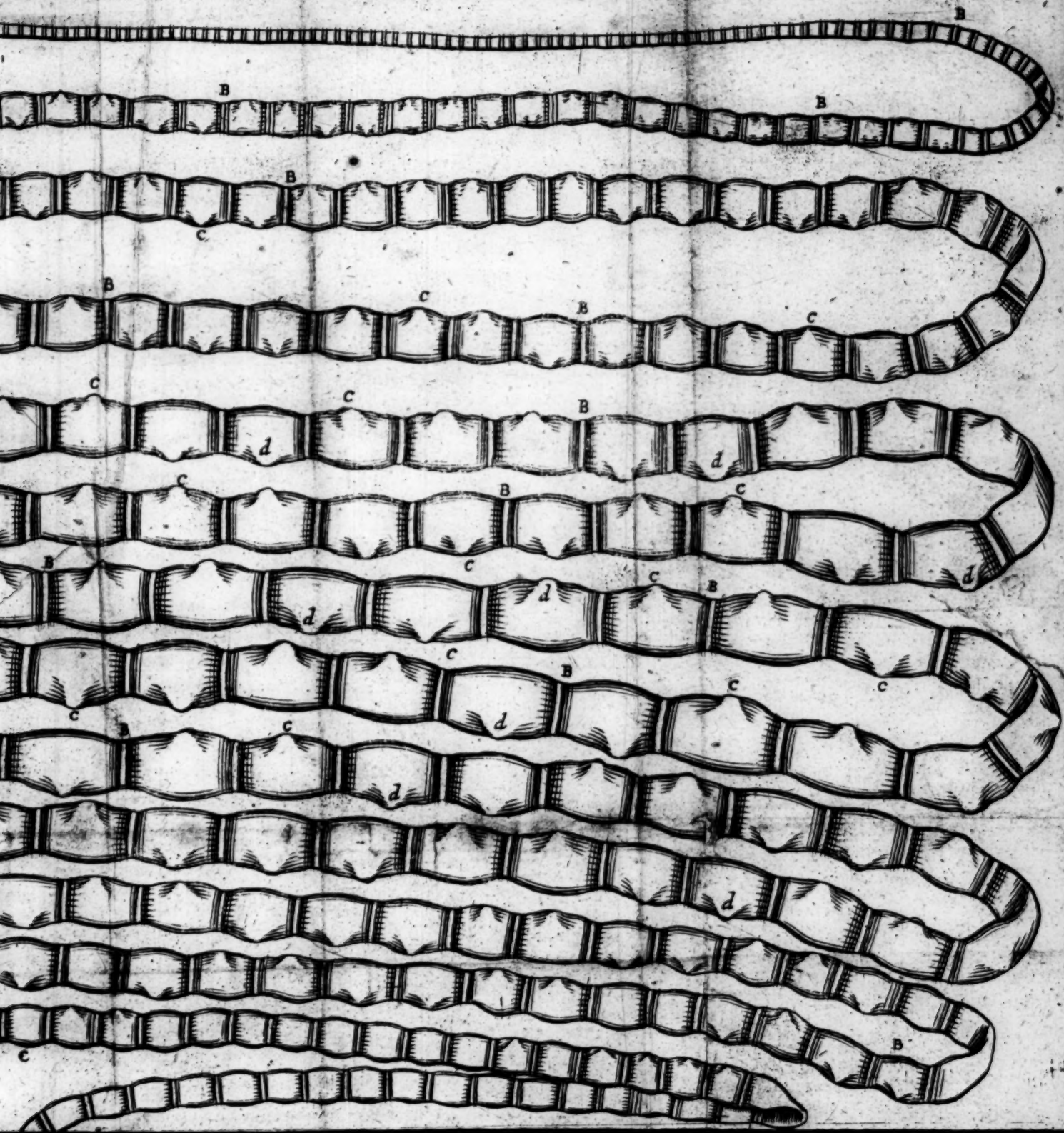
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O F



This figure represents a Worm which a potion brought away from a Man who was ill of a pleu-
 voided this Worm on the 9th of June 1698. It was flatt Like a Ribban and four Ells three In-
 away alive and continued Living above five hours with Extraordinary Motion. It was slend-
 half an Inch broad in the middle It had a black head A Large Eyes the Bod-
 Little Nipples C. in each of which there appear'd a blewish Vessel d. (which
 of the Body .d. The patient who is at present in perfect health found himself wel



a pleurisie and had a delirium at the same time He Liud in S^t Denis street at Paris, and
 three Inches Long besides the Tail of it which broke and could not be measured It came
 slender and narrow towards the Head as thick as a Crown piece and about
 the Body all white, distinguishd into Severall Joins B. and in the sides had
 which could not be exprest in this Cutt) that cross'd about half the breadth
 well as soon as ever the Worm came away.

fig. 1.



Plate I.

fig. 2.



fig. 4.



fig. 3.



fig. 5.



fig. 6.



fig. 7.

7



fig. 8.





fig. 9.

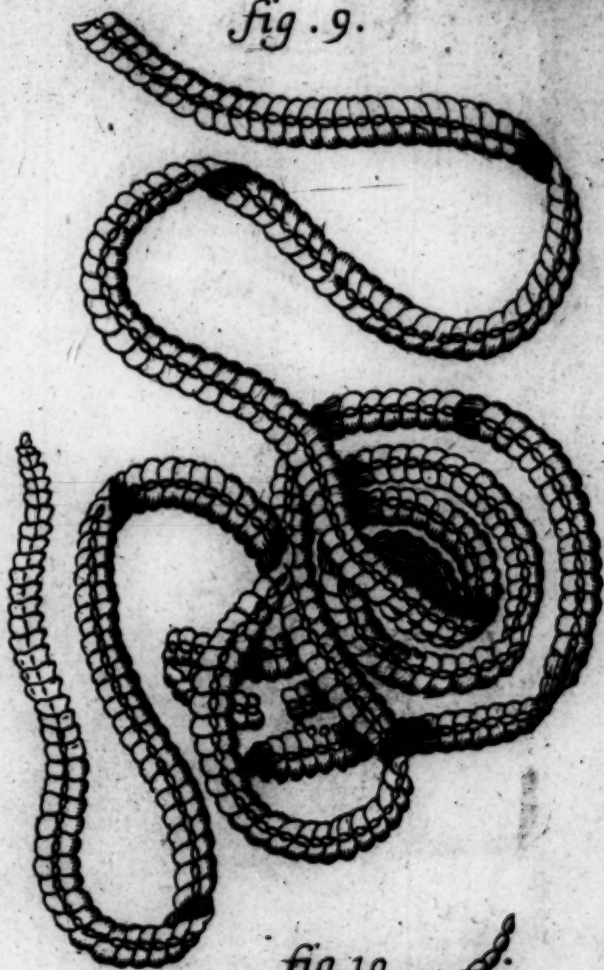
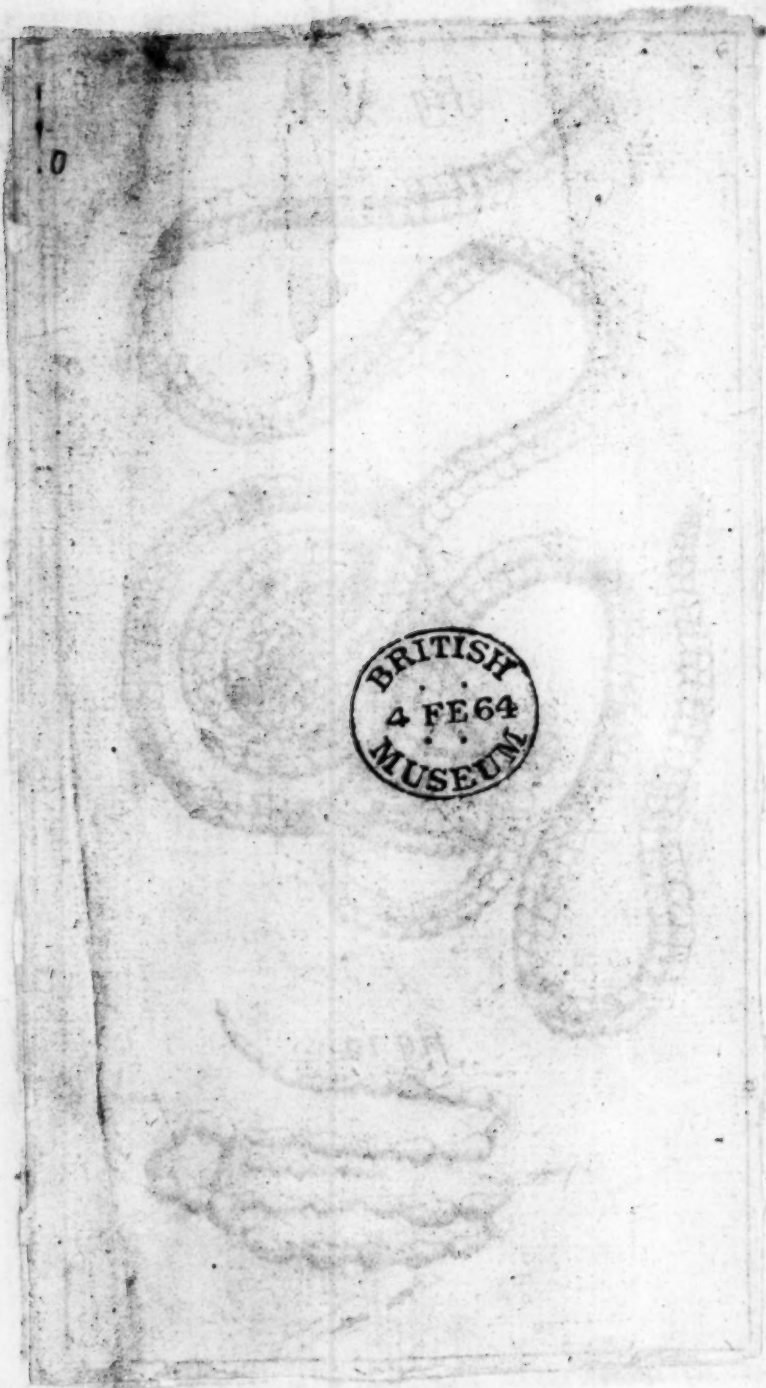


fig. 10.





BRITISH
4 FEB 64
MUSEUM

fig. 11.



fig. 12.



fig. 13.



fig. 14.

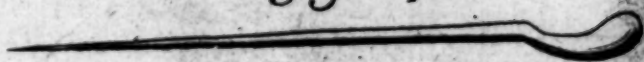
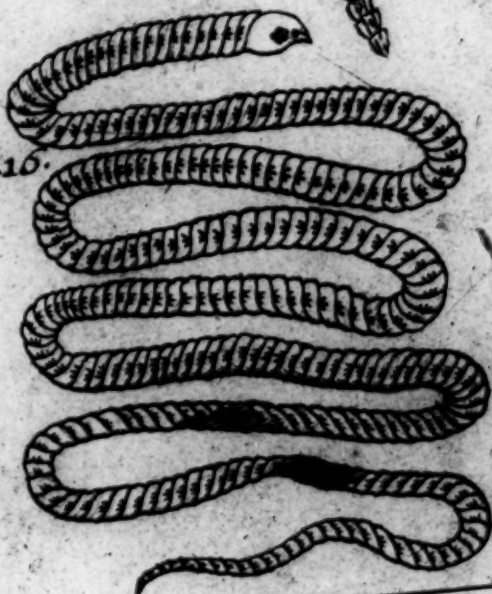




fig. 15.



fig. 16.





OF THE
BREEDING
OF
WORMS
IN
A Humane Body.

CHAP. I.

What a Worm is.

SINCE Worms are included in the *Genus* or *Kind of Insects*, it is proper, in order to understand what a Worm is, to explain first the Nature of an Insect. An Insect then is a compleat Animal, distinguished or divided by several Incisions in form of Rings and Circles, by means of which

These Observations convince us, that Insects are not the rough Draughts or imperfect Productions of Nature, as some Philosophers have imagined, since they are so far from wanting any Parts, that they have more than other Animals, as may be seen in the Common Spider, which hath eight Eyes, and in the Flie, which hath a Trunk like an Elephant, six Leggs distinguished each into four Members, of which the Extremities are likewise divided into several Parts, and armed with two Claws having betwixt them small Points, by means of which this Animal fastens it self to the least Inequalities of the best polished Bodies. 'Tis also evident in the Flea, which hath six Legs, and each of them three Joints, differently articulated with a very little slender Spring, by which it leaps in the Air two hundred times the height of its own Body, as is observed by M. Hooch in his Micrography. The Caterpillar hath also 16 Feet, 6 before, 8 in the middle, and two behind; without mentioning several other parts, that are discovered in the Body of this Animal, such as the two Plumes of black Feathers, situated round its Head, two little Oars on each side, whose Threads resemble those of Feathers, and a Skin full of little brown Hairs separated one from another, and betwixt them several small Feathers. All those Parts have without doubt their Use, though we know it not. We may say in the mean

What a Worm is.

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mean time that the great Number of Parts which compose an Animal, is not that which makes its Perfection, for provided an Animal have those that are necessary to be compleat in its Species, and that they be placed according to their proper situation, it is perfect. The Serpent that has no Feet is perfect, and the Snail that voids its Excrements at the Neck, breaths there, and in the same Place has the Parts designed for Generation, is a perfect Animal.

I do not here mention the Instance of the Mole, which some believe to have no Eyes, for it hath a Chrystallin Humor and all that is necessary for Sight.

We may observe by the way, that it is not at all to be wondred at, that some Philosophers have looked upon Insects as imperfect Animals, since some of them have been so far mistaken as to advance, that the Body of a Woman is an imperfect Work, a rough Draught formed contrary to the design of Nature, as if a Body perfectly proportioned, in which no irregularity can be observed, which wants no necessary part, and has none that's Superfluous, nay, which in that respect has the advantage of the Man's Body, where we find Parts that in some sort are useless, as the Teats, could be an imperfect Body; and as if, moreover, a Sex so necessary for the Generation of Man, and whereof Nature makes use for preserving it self, could be a-

gainst the Intention of Nature. I must confess here, with *Cicero* (c) That it is a strange thing, that there never was an Absurdity so gross, but had some Philosopher to maintain it. This is enough to give us a General Idea of an Insect. Let us now see what a Worm is.

Insects are divided into Great and Small, the first are comprehended under the General Name of *Grand Insects*, as the Adder, the Asp, the Viper, the Scorpion, the Frog, &c. the other are comprehended under the particular Name of *Vermine*, as the Flie, the Catterpillar, the Butterfly, the Ant, the Flea, the Snail, Earth-Worms, those that breed in Humane Bodies, and those of other Animals, as also in Fruit, Plants, Wood, Cloth, Liquors, and in all different Mixtures.

Of Worms that breed in Animals there are some that become very large and long, and resemble Grand Insects; but that which distinguishes them is, that they are constantly more slender than the Grand Insects that they resemble. As the Worm for example, of which we give the Figure here, it is longer than an Ordinary Serpent, but much smaller and slenderer. Most of the small *Insects* die about the end of *Autumn*, but they leave an infinite Number of *Eggs*, which are preserved

(c) *Nescio quomodo nihil tam absurde dici potest quod dicatur ab aliquo Philosophorum. Cicero. l. i. de Divin.*

during the Winter, and at the approach of the Spring open in great Numbers, and produce the little Animals, which they inclose. The Breeding of the small Insects, by the first Heats of the Spring, is that which made it to be called *Vermis* in Latin, as if we would say *Vere micans*, and in the French *Ver*, from the Latin Word, that signifies the Spring.

Of those Worms some are Reptile, that is to say, they crawl upon the Belly, as Earth-Worms and most of those that breed in the Intestines, or are found in Fruit. Others are not Reptiles, as the Flie, the Maybug, the Ant, the Beetle, the Hog-Louse, &c. The Reptile Worms, move themselves in another manner, than other Reptiles do; the latter, as, for Example, Serpents, move by Spiral Fibres of which the fore-parts spread out, and extend the Body of the Insect, whilst the hinder Parts approach one another, and by this Contraction shorten the Body which they draw up in a lesser Compass, after which the Part so contracted extends it self in its turn by spreading the same Fibres, that were contracted, and by this means gives the Body of the Insect a progressive Motion, which carries it from one place to another.

The Reptile Worms move by Spiral Fibres as other Reptiles, but with this Difference that both the fore and hind Fibres are contracted, and by this General Contraction a

little Bunch or Vault is formed in the Body of the Worm, after which they disperse, and the Parts which composed this Bunch being drawn, they extend towards the side whither they are drawn, and so occasion the Worm to move by Undulation.

Few Persons sick or well are free from Worms, as *Platerus* observes, and Experience shows it often, when dead Corps are opened: The Point is to know how these Worms can be bred in the Body of Man, which is the Thing we are now going to examine.

C H A P. II.

How Worms breed in Humane Bodies.

WORMS breed in the Bodies of Men and other Animals, by means of a Seed that enters there, in which those Worms are enclosed. For all Animals, as we shall hear anon, are bred of a Seed, which contains them, and the *Acarus* or Wax-Worm little as it is, comes perfect out of its Egg, after which it grows insensibly. We are now to explain how this Seed can enter into a Humane Body. If we consider the Eggs of Caterpillars, Flies and

How Worms breed, &c.

9

and other small Insects with the almost infinite Number of those little Animals, which Microscopes discover to us in Liquors, and generally in all Bodies, we shall easily find that there is nothing in Nature, into which the Seed of Insects may not insinuate it self, and that a great Quantity of them may enter into the Body of a Man, as well as into those of other Animals, by means of the Air and Aliments. Then since Heat is sufficient to bring forth the Worms contained in those Eggs, when those Eggs meet with a convenient Matter, it is easie to comprehend, that several Species of them may be produced in the Body of a Man according to the different Matter they find there, those Eggs being like the Seeds of Vegetables, whereof some grow in one sort of Ground, and others in another; so that a Man, whose Body abounds with a certain sort of Humour, will produce Worms of a certain sort, whilst he who abounds with another Humour will produce Worms of another; and he who has no Humour proper for the Eggs of Worms, will produce none, and so be free from them; like Ground that being not proper for certain sorts of Grain will produce none, though sowed all over with them.

Some Philosophers pretend that the Worms and several other Insects, are bred of Corruption, only by a Fortuitous Combination of Matter without any Seed. But if those
Phi-

Philosophers could explain to me two things, the one how casual Disorder could range with so much Order the Organical Parts of an Animal, and the other, from whence it comes that we see no new Species of Insect bred, since that must happen according to their System, I should allow their Opinion to be probable.

The Earth they will tell me produces abundance of Ratts by the sole Corruption of Matter, since *Diodorus* of *Sicily* reports, That in the Country of *Thebais* there were sometimes found those that were imperfect, where there was nothing but one half of the Animal to be seen, and the other half was Earth, and that nevertheless this half Animal moved; to this I answer, that if the Historian who relates this had had but the least Tincture of Anatomy, or had seen the least Dissection of an Animal, he would easily have comprehended that this Generation was impossible, and that before the Animal could move either its Head or Feet, the Body of it must necessarily have been, if not perfect, at least finished. For we know very well that there are imperfect Bodies, which come into the World defective in some part, and nevertheless live and move. We see Dogs that have only two Feet, and since those Bodies are so by Birth, I say they are finished, but not perfect.

What

What is commonly alledged of Frogs, that they are many times produced by Rain, and of the Fowls that breed in the rotten Wood of Old Ships, would favour the Opinion of those Philosophers, were it true. Sometimes there falls little Frogs with the Rain, during a Tempest; but it does not follow, that they are engendred by the Rain. The Tempest takes on those Frogs newly bred, and the Rain mixed with Dust serving them for Nourishment, makes them big, swells them up and makes them grow as speedily as Mushrooms, so that Travellers are sometimes surprized to find of them upon their Hatts, that grow as it were whilst they look upon them; nay, it happens sometimes that at first they discover nothing but an imperfect Frog, and in a moment after they appear to have Leggs; which makes some People believe that the Frogs are really engendred by the Rain; but we must conceive that those Legs are before-hand included in the Frog, and that when they appear, it is only a discovery of what was concealed, for the Leggs of the Frogs grow and come forth just like the Buds of Flowers from their Branches, as *Swammerdam* observes, which agrees to what *Jacobæus* says of it in his Observations upon Frogs, that at first that Animal seems to be nothing but a Head and a Tail.

As to the Ducks or Sea-Coots, It was thought that they were bred of the Scum of the

the Sea, or rotten Planks of Ships to which they were found fastened by the Bill, and from whence they fell off when they were well formed, but they breed from a hatched Egg as other Birds do, as Mr. *Childere* shews in his *Wonders of England*.

This being supposed or granted, I say that the Seeds of all Animals were created by the first Being, and put in the first Individuals of the Species; so that in the same moment the first Being commanded the *Earth* to produce all sorts of creeping Things and living Creatures, each Animal received wherewith to multiply it self, as the Plants, of which the Scripture says in express Terms, *That God ordered the Earth to bring forth the Herb and the Trees, each of them containing their Seed for Reproduction*, Gen. Chap. 1. It must be observed, that this Seed of Animals, contains in a little Bulk, the Animal that is to be form'd of it, and that Microscopes discover them to us sometimes quite formed. The curious Observations of the famous M. *Hartsoeker* the Mathematician at *Amsterdam*, in the *Journals de Scavans* for 1678. may be consulted on this Head, & the Letters of *Anthony van Lewenboeck*. Every Seed of Plants, contains in short, the Plant that is to come of it, and Indefinitely all those that may be bred of it.

We shall observe here that the Seeds of which we speak, may be considered, according to their *Entities* and *Diversities*. According to their

their *Entities* the Number of them is infinite, which occasions the producing every Day so many new Individuals of each Species. According to their Diversities, they are confin'd to a certain Number, which is the Cause that there is no new Species bred, neither of Animals, Plants, nor of any thing else.

Lucretius himself owned the Necessity of admitting Seeds, for explaining the Constancy of Nature in her Production. Do not you think (a) (says he) that all things could combine in every thing? If it were so, there would every Day happen Monstrous and strange Generations, which there are not. We should commonly see Monstrous half Men and half Bruits. We should see Branches of Trees spring from the Bodies of Animals, Members of Fishes united with the Members of Terrestrial Animals, and Chimera's ravaging the Country and vomiting fire. Then if no such thing happens, *continues that Philosopher*, we must needs confess that all things are bred of certain Seeds which fix them, and that there is in all that a determining Cause that cannot vary. That Cause is nothing else, according to the same (b) *Lucretius*, but the Seeds themselves which

(a) *Non tamen omnimodis connecti posse putandum est.*
Omnia, &c. Lucret. de rerum natur. Lib. 2. Carm. 699.

(b) *Primordia rerum. Carm. 522.*

we are to look upon as so many unalterable Forms limited in the Number of their Differences, and unlimited in that of their Individuals, which remain (c) hid in all beings, and are, says he, as so many Seals and invincible Characters from whence flow all the different Figures that constitute the Species.

Then every Animal hath in it self proper matter to produce its like, whether it be with or without Copulation. This Matter multiplies more or less according to the Nature of the Place the Animal meets with; Insects, for example, being in a Place proper for their Nourishment or breeding up, depose there a Quantity of Eggs. Those Eggs produce other Insects, and those Insects other Eggs, and so on *ad infinitum*. Now since those Eggs are very little and light, it is easie to judge that they may be scattered in the Air, in the Water, and upon the Earth, by means of the Winds and Rains, and that being preserved in the same manner, as the Grains of Plants are, they revive as soon as they find heat, and agreeable Matter. Hence it follows that those Eggs may be frequently introduced in Mixtures, and that they may enter into Fruit, not only by the Outside, but also with

(c) *Invenies igitur multarum semina rerum,
Corpora celare & varias colibere figuras, Lucr. ibid. Car-
min. 675.*

the Juice which the Plant draws from the Earth: By this means we may explain, whence it comes that we find Worms in certain Fruits, without the appearance of any way either without or within, through which those Worms have passed. It follows by the same Argument that those Eggs may come into our Body with the Food we take, and with the Air we breath. Those Seeds being thus mixed throughout, either bring forth, preserve themselves, or are destroyed, according as the Place in which they are, is proper, indifferent or contrary to them.

When the Insect comes out of the *Egg*, it is at first imperceptible, and feeds upon the Matter of the Mixture where it is bred, but it does not feed upon it, but whilst the Vital Action is feeble and languishing, so that when there is more of an alimentous Substance than the mixt Vegetable can transmute, there is a necessity that what's Superfluous should yield to the least foreign Agent. The Insect is that Agent, it consumes that Superfluity, where it meets with no Resistance, and we may observe by the way, that by this means the mixt Body is hindered from destroying it self so speedily as it would do, if the superfluous Part were not carried off, for if the Superabundant Matter should stand still until the Vital Heat should come to digest and transmute it, there is no doubt but there would be a strange and malignant Fermentation, which by the Ferment
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of that unprofitable Matter, would infect the whole Mass.

What we have just now observed, as to the Generation of Insects in Vegetables, may make us to understand, how Worms breed and are nourished in Humane Bodies. For it is sufficient to observe, that when the Vital Heat of the Body comes to be too weak, to drive out what is superfluous or impure in the Humours; if at that time there be found in that Superfluity or impure Matter, any Verminous Seed proper to be revived and fomented by the Superfluous and impure Matter; the Worm contained in that Seeds fails not to breed, and to grow insensibly, by means of the Nourishment it finds, and afterwards to deposit in that impure Matter *Eggs* of its Species, which become fruitful like the other. This Matter may be so impure by its Superfluity, that the Impurity being drawn to the Circumference, by means of sweating, and not finding a free enough vent, the Verminous Seeds, quicken betwixt the *Flesh* and the *Skin* and produce Worms under the Skin, which sometimes mix with the *Flesh*, and come out at different Places of the Body, as from a dead Carcass, so as it happened to *Antiochus*, 2 *Mac.* 9. 9. Sometimes this corrupted Matter, not being able to make its way, makes them breed in the Blood, so that we find them sometimes come out at the opening of a Vein, as we shall observe elsewhere.

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The small Seeds of Insects do not only insinuate themselves by means of the Air and Aliments; they likewise enter the Flesh very often by the outside, and stay there so much the more easily, that they are very subtil and sharp; so that the finest Skin is in comparison of them too Coarse. Let us add to this, that the Skin is full of Cavities, of which some are full of Sweat, and others with little Scales, all of them planted with small Hair, which occasions that those Seeds engage themselves therein easily, and that they produce there little Animals, which eating their strait Cells, wherein they are hatched, open the imperceptible Vessels, that are spread upon the Skin, and by this Erosion make the Liquor to extravasate that is contained in the same Vessels, which Liquor changes into purulent Matter, and forms several Scabs, under which they hide themselves. Thus it is that the Wax-Worms and several other sorts of Animals enter our Flesh. Experience shews it in those who handle May-buggs, or Silk-Worms much, for they never fail of having Scabbs speedily, because those Insects as well as all others, are charged with the Seed of several other lesser Insects, which they deposite in the Hand that touches them; and how can they but be charged with those Seeds, since they are all covered with imperceptible Animals, that gnaw them, as is observed in the Beetle with one Horn, upon

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which,

which, by the help of a Microscope, we discover an infinite Number of little Lice. We see the same thing in several other Insects, who are constantly taken up in ridding themselves of a troublesome Vermine that devours them: As for Example, the Fly, which is continually clearing its Wings and Feet, and picks it self constantly; for if we look upon it with a Microscope, we shall oftentimes find several Animals sucking it, and those Animals are without doubt sucked by others, and they again by others, according as there is corrupt Matter in each of them for nourishing some other Species of Animal, whose Seed stays there.

Let none object, that since we see Worms of different Subjects, in which they are nourished, there's ground to believe, that those Worms derive their Origin from the Matter it self, in which we see them; for that difficulty we have answered already, when we told 'em that it is with the Seeds of Worms, as with the Seeds of Plants, of which some can't grow but in certain Grounds, and others in other Grounds. Thus the *Worms* that eat Pease are different from those that eat Cherries; and the Vermine on Sheep differs from that on Birds, because there is in each of those Subjects a Matter proper to make such a sort of Worm breed and not another. Let them not say, That the extraordinary Quantity of Worms that are found in certain rotten things, makes

makes it evident and plain, that there's no other Seed of those Worms, but the same Matter of which they are bred, which transforms it self into those Animals; for it happens here, with regard to those Insects, as it happens in regard of Cattel. Where there is good Pasture there are Sheep and Beeves in abundance. But how can we conceive, will they say, that there can be formed by so many Seeds, such an extraordinary Number of Insects, as there comes out of the Corrupt Flesh of certain Animals; as for Example, such a prodigious Quantity of Beetles and great Flies, as are produced in the Field in the Dung of Cows, Sheep, Mules and Asses. To that I answer, That the Herbs being all covered over with small Insects, and Eggs of Insects, the Cattle by feeding on them fill themselves with those Seeds. This being supposed, I say, that those Seeds being different in their Species, & by consequence in their *Figures* and *Size*, those which are slenderer, and whose Figure is proportioned to the Passages that give Admission to the nutritious Juice of these Animals, are lodged for some time in the *Flesh*; where they remain in a readiness to teem out their Contents, as soon as the Animal corrupts; but those of a more bulky and disproportioned Size are thrown out along with the Excrements, and afterwards produce Worms, much after the same manner, that

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in a Dunghil the Corns of Wheat and Barly, cast forth from a Horses Belly, are seen to shoot forth the Herb contained within them.

To all which we may add, That the Flies planted upon this Flesh or Ordure, may there deposit several Eggs fitted for the Production of several sorts of Animals: for the Number of their Eggs is in effect incredible. The Female Bee, commonly called the *King*, teems out more than six thousand in one Year. *John Hoorn*, the famous Anatomist, made several curious Observations upon this Subject.

'Tis observed, that the Powder of *Vipers*, being kept for some time, becomes full of Worms; so that, in order to preserve it, it must be reduced to a Paste, with a sufficient Quantity of the Mucilage of Gum *Tragacanth*, and put into the form of Trochisks, to be dried in the Sun, and pounded upon occasion. Now this Experiment is not more opposite to our Opinion, than those I mentioned above, for why may not these Worms bred in the Powder, proceed from the Seeds locked up in the Flesh of the Viper, while it lived, pursuant to the Account we have already given of the breeding of Insects in the Carcasses of other Animals. *M. Redi*, alleges, that if we take fresh Meat or any of the other things, that commonly give rise to Worms, and shut it up in a Vessel stop'd close.

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'Twill produce none: Upon which Allegation he concludes, that these Worms owe their being only to the Seeds deposited by the Flies. But M. Redi's Experiment does not always hold, for sometimes Worms will breed in a Piece of fresh Meat, though the Vessel be never so well stopp'd, without the least Suspicion of Flies getting in; as in a Glas-bottle. Besides, the Powder of Vipers, notwithstanding its being kept never so close, becomes full of Worms; unless it be fortified by the above-mentioned Precautions. So that the most natural way of accounting for the Generation of Worms in the Carcasses of dead Animals, is to have recourse to the Seeds that entered the Body while the Animal lived; though at the same time 'tis not to be denied, but that Flies having access to the dead Carcass, may bring in fresh Supplies.

So much for the breeding of Worms in General. Our next Business is to see how the Worm voided by the Patient, bred in his Body, according to the Principles now laid down.

The breeding of this Worm will be sufficiently accounted for, if we suppose that the Patient drank or eat any thing in which the Seed of that Insect was lodged: Whether the Worm that voided that Seed, lived in the Body of another Man, or elsewhere; or whether it continued a sufficient measure of time, or not; since the want of Nourishment might

occasion the incompleatness of its growth, as well as want of time; for there are Animals which still grow in proportion to the abundance and Quality of their Nourishment, as well as others which do not surpass a determined Size. Thus we see some Flies almost as big as Maybugs; and the Worms which in Vinegar Bottles, are almost unperceivable, become much longer and bigger in Vinegar Casks. *I say then*, That the Patients swallowing something that contained the Seed of this Insect is a sufficient Reason for the breeding of it in his Body; and if any one ask me, how that Seed got into the Victuals? I answer, That it may as well be there, as the Seed of an infinity of other Worms in Fruits, Cheese, Herbs, &c. But after all, to avoid defending an Opinion that wants not its own Difficulties, why might not one say, that in case the Seed of the Worm did not enter the Patients Body along with the Victuals, perhaps it might have accompanied the Blood of his Father from the time of his Conception? For since no other Place either of Earth or Water presents us with such long Worms, why should we think their Seed is forreign to a Man? May not we rather conceive that these same very Seeds were created in the Seed of Man, along with Man himself; as well as the Seed of Lice, which are peculiar to Men, in so much that their Species would sink, if that of Man

Man should come to an end? (a) So that perhaps this VVorm breeds within us, only because its Seed is already form'd in the same Matter that gives Being to Man; like those Plants (b) which grow upon others of a different Nature, and no where else. For it is very probable, that the Seed of these Plants is lodged within the Seed of the Trees, upon which they grow. In like manner the Seed of this VVorm might have lurked in that of the *Fetus*. Nay, to go further, the very VVorm might be there in its compleat Form, for the Seminal Liquor of all Animals is full of VVorms. This suites admirably well with the Opinion of *Hippocrates*, who, speaking of this same sort of Worms, alleges, that commonly 'tis found in the Mothers VVomb.

The Insect being thus convey'd into the Body, either with the Food, or in the manner above mention'd; we may safely suppose, it there met with all the Nourishment that was necessary for its growth, and by that means arrived at its uncommon length. Nay, if it had not been broken, perhaps it might have equalled the length of the Guts, which, according to (c) *Hippocrates*, is the common

(a) See M. Hartsoeker's Letter, in the latter End of this Treatise.

(b) *Mistletoes*.

(c) *Lib. 4. De Morb.*

Measure of VVorms in those who are arrived at the Years of Discretion, or near them. *Hippocrates* (d) adds, That when the Worm is become thus long, it still continues its Growth as before; which favours the Opinion of *Pliny* (e) who testifies that sometimes these Worms are thirty Foot long; and is further confirmed by later and more surprizing Instances, for M. *Harscocker* (f) sent me Word from *Amsterdam*, that M. *Ruisch*, Professor of Anatomy in that City, shewed him a Couple, one of which was more than 45 French Ells in length.

Here we may observe, That *Hippocrates's* Opinion of the Worms breeding in the Mother's Womb, is very probable: for as much as we see several new born Children void very long ones of this sort, and that just upon their coming into the World. This was observed by *Hippocrates* himself; and daily Experience will vouch for it. Now 'tis not to be thought, that a Creature of such an extraordinary size could grow in so short a time, or be voided by a new-born Child, without it had a being in the Mother's Womb. This is (g) *Hippocrates's* Plea, and seems to stand to Reason. 'Tis well known, that Chil-

(d) *Hip. de Morb. Rom.*

(e) *Plin. l. 11. cap. 33.*

(f) See his Letter at the end of this Account.

(g) *Lib. 4. de Morb.*

dren very young have voided some above four Ells long. And *Gaspar Wolpius* in his Observations, cites an Instance of a little Girl upon the Breast, that voided some of that length, by Virtue of a Purge exhibited for that purpose.

Sennertus (b) says, this Worm breeds in Men at all Ages; and for Proof of his Assertion, instances in a Girl of 12, a Woman of 23, and a Man of 80 years of Age, that voided Worms of this sort. But that Proof amounts to no more than this, that this Worm is to be met with at all Ages; but not that it breeds at any Age. The old Man, for Example, might have had this Worm from his Infancy; pursuant to the Doctrine of *Hippocrates* (i), who tells us, That this is an Insect that oftentimes Accompanies us to old Age.

Before we conclude this Chapter, 'tis proper to Remark, that when once this Worm is dislodged from the Body, We never breed any more of that sort. This was the Opinion of *Spigelinus* and all the other Physicians that made it their Business to survey the Nature of this Insect; the Species whereof shall be more nicely traced in the ensuing Chapter.

(b) *Sennert. Prax. Med. l. 3. Part 2. Cap. 5.*

(i) *Lib. 4. de Morb.*

C H A P. III.

Of the different sorts of Worms, bred in Humane Bodies.

TH E different Species of Worms are so many in Humane Bodies, that no other sort of Animal presents us with the like Number. The several sorts of them are bred in Minerals, Vegetables and Animals. I do not speak of those which the Ancients fancied to breed and grow in Fire, and to fly a-cross the Flame without being burned, which they called *Pyrausta*, from a Greek Word, (*a*) importing their fearlessness of the Fire : for I look upon all that as fabulous ; there being no other *Pyrausta*, but those little winged Fire-flies, that are seen to fly about lighted Candles, and oftentimes to burn themselves as flying a-cross the Flame.

Doubtless 'twas these little Creatures that moved *Aristotle* (*b*) and *Pliny* (*c*) to say, That the Black-Smiths Furnaces in the Isle of *Cyprus* present us with flying Insects, as big as large Flies, which breed in the Fire, and die when ever they go from it : For as soon as

(*a*) *πυγύστις*, a Word derived from *πυρ* Fire, and *δύω* to kindle.

(*b*) *Arist. Hist. Animal. l. 5. c. 19. in fine.*

(*c*) *Plin. Hist. Nat. l. 11. c. 36.*

Of the different sorts of Worms, &c. 27

this little Insect burns the Extremity of its Wings, it retires from the Fire, and sometimes falls at some Distance from the Place where it was burn'd. Neither do I speak of those which *Pliny* fancies to breed in the Snow. 'Tis true, we sometimes meet with Worms under the Snow, as well as little green Herbs; but that does not conclude their breeding in the Snow. I shall wave all these Fables, and confine my self to what is backed by Experience.

I said but now, that Worms breed in Minerals, Vegetables and Animals. As for Minerals, we find Worms that gnaw Coral and the very Stones; which are of a different Structure, according to the Difference of the Bodies they gnaw. Stones, for instance, are eaten away by black Worms, about two Lines long, and three Quarters of a Line broad, lodged in a grayish Shell, having a very large Head, ten very black and round Eyes, three Feet on each side towards the Head, and four sorts of Jaw-bones, ranged cross-ways, which they move continually, and which open and shut like Compasses of (a) four Branches. Mortar is likewise gnaw'd by an infinity of little Worms, about the bigness of Mites in Cheese, which are blackish, and have four pretty long Feet on each side, as well as Mites.

(a) *Journal des Scavans*, for 1688.

28 *Of the different sorts of Worms,*

It is no surprizing thing, that Worms should gnaw Stones, since we see Vinegar corrodes them, and strong Waters do the same to Metals. Vinegar, for instance, corrodes the Stone, by Vertue of the Motion of the several little Parts it is composed of, which brushing against the Stone, and being of a *Figure* proportioned to its Pores, squeeze into them like small Needles, and sever its Parts. Now why may not the sharp pointed Teeth of a Worm make the same impression upon its Body, that the small Needles of Vinegar are known to make? What is apparently more weak than a small drop of Liquor in Comparison of so solid a Body as Stone? And shall not a living Machine, such as a Worm, be able to have the same influence upon a hard body, that a drop of Liquor has; supposing this Machine to be furnished with extrem delicate Teeth, and fitted for piercing in between the Parts of the Body?

As for Vegetables; There's scarce any Plant, but what has its Worm, its Caterpillar or Butterflie, pursuant to the Observations of a noted Herbalist for several Years. 'Tis observ'd, that the Cochineal-Tree breeds little Worms of a particular sort in the same Cod with the Cochineal, which appear in the form of little Flies, when it is dried, and occasion its being entituled *Vermillion*. We meet with Worms in *Burnet*, *Wormwood* and several

several other Herbs ; which are all of different sorts : And of these in one Plant, some are peculiar to the Stalk, others to the Leaves, a third sort to the Flowers, a fourth to the Root, and a fifth to the Seed ; which make so many different Species. The Juices of *Fruits*, such as pall'd Wine, Vinegar, Cyder, &c. are sometimes so full of little Animals, that thousands of them may be discerned with a Microscope, and those of different Species, according to the Diversity of the Juices in which they breed. The hardest Wood is likewise consumed by Worms, particularly the Planks of Ships produce some bigger than Silk-Worms, which by reason of the Moisture are very tender, and shine like Glow-worms, having a black hard Head, with which they pierce the thickest piece of Wood.

As for Animals ; There's scarce any without Worms, which are of as many different sorts, as there are Animals in which they breed. There's scarce any *Fish* without them. Particularly in Oysters we find Glow-Worms of a whitish red Colour, as long as the breadth of five or six Lines, and as big as the Point of a small Needle ; with 50 Feet, 25 on each side, and a Back like a flea'd Eel. The hardest Shel-fish are likewise pierced by Worms. Some of these Worms breed upon the Skin of the Creatures, some between the *Flesh* and the *Hide*, and a third sort within the *Body*. Of this last sort, some breed in one part, and some

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30 *Of the different sorts of Worms,*

some in another, and make so many particular Species. They breed in the Guts, Liver, Reins and every where else. The *Journal des Scavans* for 1668. presents us with a very curious Description of Worms in the Liver of a Sheep. And nothing is more common than to find Worms in the Kidneys. M. Meri, Fellow of the Royal Society shewed me one half an Ell long, and as big as one's little finger, which was taken out of a Dog's Kidney. Kerckringius (a) also informs us, that in dissecting a Grey-hound, he found a Worm an Ell and a Quarter long in one of the Kidneys, and adds several other instances to that purpose: Not to speak of those we sometimes find in the Head, Breast, and elsewhere. In tracing the several sorts of these Insects in order, I shall confine my self to those which breed in Men, who of all Creatures are most subject to them, there being scarce one part of our Body clear of them; so that he who rules the highest Beasts, who tames the Horse, the Camel, and the Elephant, and makes them serve his Ends; who curbs the fierceness of the Lion and Tygre, does oftentimes fall a Sacrifice to the Teeth or Venom of a small Animal, that he cannot Repulse.

(a) *Observ. 57. & 59.*

The Worms of Humane Bodies breed either within the Guts, under which I include the Stomach, or out of them. We shall first Treat of those that breed out of the Guts, and then come to those that breed in them: And forasmuch as both the one and the other do sometimes assume different *Forms* as they grow old, I shall therefore allot a third Article for treating of their various Changes and Alterations.

ARTICLE I.

Of Worms bred without the Guts.

The Worms which breed out of the Guts, are of different sorts, or rather are drawn up in different Classes, pursuant to the variety of the Places in which they are bred. Accordingly I shall place them in their Ranks, *viz.* The *Cephalick*, the *Pneumonick*, the *Hepatick*, the *Cardiack*, the *Sanguine*, the *Vesicular*, the *Spermatick*, the *Elcophagi*, the *Cuticular* and the *Umbilical*.

The *Cephalick* breed in the Head, where they occasion violent Pains, and sometimes Madness: Upon which account some have distinguished them by the Name of *Furious*. They are called *Cephalick* from a Greek word that signifies the Head; and are divided into four Sorts, *viz.* the *Encephali*, properly so called, which breed in the Brain, the *Rinarij*, which

32 *Of the different sorts of VVorms,*
which breed in the Nose, the *Auricular*, which
are brd in the Ears, and the *Dentaria*,
which infest the Teeth.

The *Encephali* are very rare. They pre-
vail in some particular Distempers. Some
Pestilential Fevers have been observ'd to take
rise from them; witness that raging one at
Beneventum, which swept off so great a
Number of People, without yielding to any
Remedy, till at last the Physicians thinking
fit to open up the Body of one that dyed
of it, found in the Head a little live Worm,
very short, and all over red; and having
try'd several Medicines for killing it, found
nothing effectual, but the decoction of Ra-
dishes in Malmsey Wine, which was no
sooner poured upon the Worm, but imme-
diately it died. After that Discovery they
administred the same Remedy to all their Pa-
tients, (a) and almost all of them recove-
red. *Appianus Alexandrinus* (b) tells us, that the
Romans, in their VVar with the *Parthians*, under
the Conduct of *Mark Antony*, were reduc'd to
such Extremity, by want of Provisions, that
they were forced to feed upon Field-Herbs,
and after that were seized with an Epide-
mical Distemper, inspiring them with such
fury, that they fell a digging the Earth and rol-

(a) *Forest. lib. 9. de variis capitis doloribus: Observ. 2. in Schol.*

(b) *Appian. Alexandr. cap. 5. de bello Parthico.*

ling great Stones, as if it had been to carry on some great Design. He adds, that this Disease was incurable for want of Wine, which, he says, was the only Remedy for that Distemper. I guess this Madness might proceed from some Worms bred in their Heads out of the bad Juice of the Herbs they fed upon: And this Conjecture I ground upon an Instance of a Gentleman of *Dauphiny*, who as I was told by a very credible Person, having ate in his Drink a Sallade of all sorts of Herbs, both good and bad, which he had purposely ordered to be gathered so, after three Days run out into the Fields and scratched up the Earth with his Nails, and heaped up in Piles all the Stones he could find. A few Days after he died, and being opened, a Worm, resembling a small Caterpillar, was found in his Head. This Worm they put into warm Water, and after two Days it died upon the pouring in of three or four Drops of Wine: Which agrees with the Observation of *Appianus*, that this Distemper among the Romans was incurable for want of Wine.

I knew a Man that after being perfectly cured of a Venereal Disease, complained of an unsufferable Head-Ach; which came to that height, that Trepanation was reckoned proper for him. When he was trepan'd, a little short Worm all over red, was found upon the *dura Mater*; upon the removal
D whereof

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whereof the Patient recover'd perfect Health,
and enjoys it to this Day.

We meet with much such another Story in *Forestus*; only with this Difference, That the Worm he speaks of was black. *Sabenckius* has a very remarkable one, viz. That in the Year 1571. an Epidemical Disease raged in the Country of *Ancona*, which caused a furious Giddiness, and Death on the third or fourth Day. All the Physicians of the Place owned, that they did not understand the Disease, and by Consequence that they knew not how to cure it. A rich young Man of 21 Years of Age, finding a periodical Pain beginning in his Head, became apprehensive of being seized with the Distemper; and being frightened by the ingenuous Acknowledgment of the Physicians, thought it his Interest to leave that Country and go to *Venice*, which was at that time furnished with very famous Physicians. Upon his arrival at *Venice*, he called for a Consultation of the most learned Physicians, among whom was the famous *Nicholas de St. Michel*, who maintained that a Worm in the Brain was the occasion of his periodical Pains, which were so very violent in the Paroxysm, without disturbing either his Reason or Memory, that it seemed as if his Head had been bor'd with an Iron. They administred several Remedies, but to no effect; so that he died in three Days after his arrival. *George Carverus*, one of the Physicians

ficians that waited upon him, intreated his Relations to suffer his Head to be opened; which accordingly he did, the next Day, being the 29th of *November*, and had no sooner turned up the *dura* and *pia mater*, but he perceived on the right side, the Head of a Worm, which by reason of the cold Air immediately retired into the Substance of the Brain. Then *Garverus* cut open the Ventricles of the Brain, and traced out the Worm, which was all over red, as long as one's Fore-finger, the Head black and pointed, and the Neck Hairy. He pulled it out with Pincers, and put it upon a Piece of Paper, where it died immediately. This Example is related by *Schenckius* in his Treatise of Head-Aches. 'Tis alledged, that there are Worms found even in the *Glandula Pinealis*, and that scarce any part in the Head is free from them. At the bottom of that Passage which leads to the fourth Ventricle of the Brain, there stands a *Process*, called *Apophysis Vermiformis*, or the Worm-like *Process*; which, as some Authors pretend, turns to a Worm: But the Allegation is fabulous, for it takes its Name only from its resemblance of a Worm.

The *Rinari* breed in the Root of the *Nostrils*, being so called from a Greek Word that signifies the *Nose* (a): Sometimes they

(a) *Borell. Observ. Medicioph. Cent. 3. Obs. 45.*

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creep out of the Nostrils of their own accord, as it has happened on several Occasions; at other times they lie fastened in the bottom of the Nose, and make the Patient mad. Whoever has read *Fernelius* must needs be acquainted with the Story of the (a) Soldier that became mad and died on the 20th Day of his Illness; in whose Nose two rough Worms as long as one's Finger, were found, after his death. *Ambrose Paræus* (b) has obliged the World with a Draught of these Worms, as well as *Aldrovandus*, in his Book of Insects; which is likewise annex'd to the latter end of this Treatise.

Kerckringius in his Anatomical Observations, gives us the Figure of a hairy horned VVorm, that came out of the Nose of a VVoman at *Amsterdam*, on the 21st of September, 1688. and which he kept alive till the third of October, without giving it any Food: And, which is very remarkable, adds, That it brought forth another VVorm before it died. The second Figure in this Treatise represents these two VVorms.

I could easily muster up an infinite Number of instances of prodigious VVorms found in the Nose, upon the credit of other Authors; but since it is not what's uncom-

(a) *Fernel. Pathol. l. 5. c. 7.*

(b) *Ambros. Par. l. 20. c. 3.*

mon, but what's true, that I now pursue, I shall therefore content my self with those I just now cited. In the mean time, 'tis proper to observe, that sometimes Worms issue forth at the Nose, which did not breed either there or in the Head, but proceed from the Guts in a manner to be accounted for elsewhere.

The *Auricular* Worms are bred in the Ears, and take their Name from the Place of their Nativity. That Worms are bred in the Ears, is what Experience puts out of doubt, and of which I myself have seen several Instances. A young Girl being ten Years of Age, and troubled with the King's Evil, had a violent pain in the right Ear, which suppurated from time to time, and sometimes she became deaf. I employed several *Remedies* in order to a Cure, but their want of Success put me upon suspecting that there were Worms in the Case; and indeed the Event justified my Suspicion: For having ordered and applied an Ointment for the purpose, a great Number of very small Worms issued forth, many of which were alive. These Worms were yellow and somewhat long, and so very slender, that if there had not been a great Quantity of them together, we should scarce have discerned them. *Tharantanus* says, he saw two or three Worms issue forth from the Ear of a young Man that was ill of an intermitting Fever, which resembled Pine-Seed,

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Seed. (a) *Panarolus* speaks of a Patient that was troubled with a violent Pain in his Ear, and after the Injection of Woman's Milk, voided at the same Place several little Worms like the Mites in Cheese; whereupon the Pain ceased.

Kerkringius (b) gives us further the Delineation of the Five worms that issued forth from a Man's Ear in the Year 1663. in a Village called *Quadiick*, which were form'd just like Hog-Lice, bating that they had ten Feet. You may see them delineated in Figure 3.

The *Dentarii*, or those which breed in the Teeth, are commonly bred under a Crust that covers the Surface of the Teeth when they're disorder'd. These Worms are very small, having a round Head mark'd with a black Point, the other Part of their Body being long and slender like those in *Vinegar*; according to the Observations I made upon small Shells, that a Tooth-Drawer took off of a Lady's Teeth in cleaning them. Almost all these Shells had Worms. These Worms corrode the Teeth by Degrees, and occasion a stink, but no violent Pains, for 'tis a mistake that vehement Tooth-Aches are occasioned by VVorms.

(a) *Fatrolog. Pentecost. 4. Observ. 27.*

(b) *Observat. Anatom. 19.*

The *Pulmonarii* are bred in the Lungs. They are but seldom met with. (a) *Fernelius* mentions a few Instances. 'Tis certain, that some sick People have thrown up VVorms by coughing, that were so wrapped up in the Spittings, that without Question they must needs proceed from the Breast, as *Brassavolus* (b) well observes. . Some of these VVorms are like little Flies, as (c) *Avenzoard* and *Alsatharavius* (d) informs us : Others resemble the Kernel of a Fine-Apple, according to the Observations of (e) *Thomas a Viega* : And others again resemble Bugs, as *Joachim Camerarius* observes in *Sehenckius*.

Hepatick VVorms are bred in the Liver, being so called from a Latin VVord that signifies the *Liver*. Several Authors would have them to breed elsewhere, as if the Gall of the Liver should hinder their Generation in that Part : But since the Liver is Subject to Dropsies, in which it is oftentimes fuller of VVater than of Gall; I see no Reason why VVorms may not breed in it, especially since 'tis only upon such Occasions that VVorms are found in it ; according to *Hartmannus's* Observation, of which more anon. *Casparus Baubinus* (f)

(a) *Fernel. Pathol. de Morb. infect.*

(b) *Brassav. Comment. ad Aphor. 47. l. 4. Hip.*

(c) *Avenzo. l. 1. Tract. 11. Cap. 3.*

(d) *Alsathar. c. 1. Tract. 13. Pract.*

(e) *Thom. a Veiga comment. ad cap. 5. l. 1. Galen. de locis Affect.*

(f) *Baubin. de Observat. propr.*

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has a Consultation that comes in very patly on the Subject. In *October 1578.* several little Worms were found in the Liver of a Child of two Years of Age that died of the Small-Pox, in the Presence of several Physicians, and among the rest *Amilianus de Champ long*, then Professor at *Padua*, and *Casparus Baubinus*. A great Dispute arose relating to the Place where the Worms bred. For the Child being dead of the Small-Pox, some apprehended that the Venom of that Distemper might have corrupted the Noble Parts. *Amilianus de Champ-long* having a mind to satisfie his Eyes, caus'd the Body to be opened. In examining the Liver, they found a great many Worms, some dead, some alive, in the Branches of the *vena porta*, and the Branches peculiar to the Liver. These Worms were red, round, somewhat long, and soft to the touch. The Physicians that assisted at the opening, were divided in their Opinion of the Place where they bred. Some affirm'd that they bred in the Guts, and passed thro' the Mezaraick Veins to the *vena porta*, and from thence to the Vessels peculiar to the Liver: Others were of Opinion, that the Liver was the true Place of their Nativity, but that they did not breed there till the Child was dead. Others again gave it in for certain, that they were bred in the Liver, during the Patient's Life. This last was *Baubinus's* Opinion; and to me seems very probable, especially

bred in Humane Bodies. 41

cially considering that there are several Occasions, on which the Gall in the Liver is so much altered, that it loses almost all its Bitterness, and becomes proper for breeding Worms, if it fall in with their Seed.

The *Cardiaci* are bred in the Heart, being so call'd from a Greek Word that signifies, *the Heart*. They are of two sorts, the *Cardiaci* properly so call'd, and the *Pericardiaci*; the former breed in *the Heart* it self, the latter in the *Pericardium*. *Vidius* (a) writes, that these Worms were found in several Parts of the Body, in some Plagues. They occasion violent Pains, and sometimes sudden Death. *Sphererius* tells us (b) that a *Florentine* Gentleman, discoursing one Day with a Stranger in the Great Duke of *Tuscany's* Palace, fell down dead on a sudden, and his Body being opened upon Suspicion of Poyson, a living Worm was found in the chest of the Heart. It may be asked perhaps, how Worms should breed in a Place that moves so violently as the Heart. To satisfy our selves in this point, we need only to reflect upon the Fabrick of this Muscle: 'Tis well known, that at the bottom of the Heart there are two Cavities like two Baggs, one on the right and the other on the left side, which we call *Ventricles*; that these Ventricles are beset with

(a) *Vidius jun. de curat. memb. l. 7. c. 1.*

(b) *Shenck. observ. Med. l. 2. de Corde.*

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fleshy Pillars, and have several Depths and
small Chinks, which render the internal Sur-
face rough and uneven. Now the Worms
seulk and remain in these little Chinks, not-
withstanding the continual Ingress and Egress
of the Blood. I could cite many Instances of
Worms found in the Heart; but I am un-
willing to pile up Histories upon Histories,
for fear of fatiguing the Reader with super-
fluous Recitals to the same purpose.

The *Sanguine* Worms are found in the Blood.
Sometimes they spring out in Letting Blood,
as (a) *Rhodius*, (b) *Riolanus*, (c) *Etmullerus*,
and several other Authors assure us: And as
I my self can witness upon two several Oc-
casions.

To all which we may add the Testimony of
M. de St. Martin, a noted Surgeon at *Paris*,
who, having bled a Patient by the Order of
M. Zuartier, a *Paris* Physician, and the Blood
being stopp'd all on a sudden, observed a
strange sort of a Body that stopp'd up the
Passage; presently he turned up the Arm,
and saw a horned Worm as long as an Ear-
wig, skip out with Violence along with the
Blood. *M. Daval*, a Member of the College
of Physicians at *Paris*, told me, that he has
seen Worms come out along with the Blood

(a) *Rhod. cent. 3. Obs. 6.*

(b) *Riolan. Encheir. Anatom. p. 147.*

(c) *Etmul. Schrod. diluc. Phytolog. class. 2. de aceto.*

several times ; and that one Day his Father saw two come forth at one Blood-Letting.

'Tis said of the famous Father *Senault*, Priest of the Oratory, and Author of a Treatise of the Passions, that some Days before his death, a winged Worm, resembling a Dragon, was found in the Blood that was drawn from him. However, I cannot give in this for a certainty, since 'tis possible they might mistake some little Fly fallen by Accident into the Porringers, for a Worm bred in the Blood. 'Tis to such Mistakes as these that we oftentimes owe a great many Stories that are given in for Truths, which, when sounded to the Bottom, serve only to expose the Simplicity of those that told them. These Blood-worms are not always of the same Form, though at the same time the commonest sort of them are pretty much of a piece, and their shape is very remarkable. Their Body resembles a Myrtle-Leaf, interwoven with Filaments, like those we see upon the Buds of Trees : Upon their Head they have a Vent, like Whales, through which they throw up the Blood, when it has glutted them. The same very Worms, are likewise to be seen in the Blood of other Animals, if we take the Livers of Calves or Oxen new killed, and chop them into small pieces, and squeeze them in Water with the Hand ; thus several Worms will issue forth along with the Blood, and will move very sensibly

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sensibly if the Livers be fresh. The Peasants in *Languedock* are well acquainted with this sort of Worms: They call them *Dalberes*, from an Herb that among them stands charg'd with breeding that sort of Vermine in the Body. See *Borellus's* (a) Observations upon this Head. 'Tis remarkable that these *Worms* are not red, but white. At first view one would think it strange, that they are not of the same colour with the Blood; but the true reason of their whiteness is, that they feed upon Chyle, and not upon Blood. For though the Blood appears all over red, yet 'tis full of a great many white and chylous Parts, that are not yet chang'd into Blood. Now the Worms feed upon those chylous Parts, and doubtless 'tis *that*, that makes 'em white. The Blood that brings forth Worms does not always seem to be the worst; nay, I remember that, five Years ago, having ordered bleeding for a little Girle that had been pox'd by her Nurse, I found several Worms in the ferous part of the Blood, tho' at the same time the Blood look'd as well as any Blood could do. The reason whereof, perhaps, was this; the white and chylous Parts being consum'd by the *Worms*, there was not a sufficient number behind to impair the *lively colour* of the *Blood*.

The *Vesicular* *Worms* are found in the *Bladder* and *Kidneys*; and issue forth in the *Urine*.

(a) Cent. 3. Observ. 4.

They are of different Forms. *Tulpius* (a) makes mention of a *Worm* voided by the Bladder, that was long and round like those of the Intestines, and red like Blood; in others we discern an infinite Number of Feet, a pointed Tail, with a black spot at the end, and a large Head, with two small Risings on the two sides, the upper part of the Body round and smooth, and the Belly uneven. An *Amsterdam* Physician, mention'd by *Tulpius*, voided twelve of this sort in making VVater; which *Tulpius* has delineated in the second Book of his Observations, and are represented in our fourth Figure. These *Worms* resemble Hog-Lice. *Ambrose Paræus* (b) tells us *Lewis Duret* voided such *Worms* by *Urine*, after a tedious illness. There is yet another sort of them, that have only six Feet, 3 on each side towards the Head, and are all over white, resembling the Mites in Cheese. Such were those voided by a *Woman* 50 years old, mention'd by (c) *Tulpius*. There are others that resemble Leeches; they have two Heads like Caterpillars, one at one end, and the other at the other end: Sometimes they live a pretty while after they are voided, provided they are kept in warm *Water*, by which means one was kept alive seven Months, as (d) *Baldwinus Ronseus* tells us. Others again are formed like

(a) *Tulp. Observ. Medic. l. 2. c. 4.*

(b) *Ambros. Paræ. lib. 20. cap. 3.*

(c) *Tulp. Observat. Medic. l. 2. c. 5.*

(d) *Bald. Ronf. in Epist.*

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little Grasshoppers; of which sort was that
voided by Urine by Count *Charles* of *Mansfeld*,
when he lay ill of a continual Fever in *Guisse-*
Hause, of which *Ambrose Paracelsus* has given a
Delineation; and which is here represented
in Fig. 5. There are some Persons in perfect
Health, whose Urine is full of Worms.

The *Spermatick* Worms are bred in the
Humor that Nature separates in all Animals
for the Propagation of their Species. The
more healthy that the Creature is, the greater
number of Worms is lodg'd in its Seed. 'Tis
probable these are not useless Worms; per-
haps they are the very Creatures that are
afterwards brought forth by the Female.
Why may not they enter into the Egg, and
after that assume the Nature of the *Fetus*.

The *Ectophagi* are bred in Ulcers, Tumors,
and Impostumes. They derive their Name
from a Greek Word (*a*) that signifies, *an Ulcer*,
and another (*b*) that signifies *to eat*. Some-
times the pusses of the Small-Pox are full of
them, according to the Observation of *Borel-*
lus (*c*), as well as Carbuncles, Pestilential
Bubo's, and Gangren'd Flesh. *Hauptman* tells
us, That a *Worm* taken from a Gangrene and
put upon Paper, presently brought forth 50

(a) ἑλκός.

(b) φάγω.

(c) Petr. Borel. *Histor. Observ. Medicophys.* Cent. 2. Obs. 72.

more, as they observ'd by a Microscope. *Ambrose Paræus* in his third Chapter of the 20th Book of his Treatise of the Small-Pox and Leprosie, speaks of a hairy *Worm*, with two Eyes, two Horns and a forked Tail, found in an Imposthume in a young Man's Breech; which the famous *James Guilleman* took out, and gave to him, who kept it alive above a Month in a Glass Phial, without giving it any Food. You have it represented here in Fig. 6.

The *Cutaneous Worms* breed under the Skin, between the Flesh and it, and are so call'd from a Latin word, that signifies the *Skin*. There are several sorts of them; their principal Species are the *Crinones*, the *Wax-Worms*, the *Ox-worms*, the *Silk-Worms* and the *Foot-worms*.

The *Crinones* are so call'd, because they come out like little Balls of Hair, in the Arms and Leggs, and especially in the Backs of little Children. They dry up the Body, and consume the Juice allotted for the Nourishment of the Parts, as *Schenckius* (a) observes. (b) *Kufner*, (f) *Montanus*, (g) *Ambrose Paræus*, (e) *Etmullerus*, (f) *Rensnerus* and

(a) *Schenck. Observ. Med. l. 3. de Phthiriasi. Obs. 8.*

(b) *Kufner, cap. 12. append. ad lib. Leonel. Ravent. de Morb. Puer.*

(c) *Mont. de infant. febrib.*

(d) *Ambr. Par. l. 7. c. 21. chirurg.*

(e) *Etmul. de Morb. infant.*

(f) *Hieron. Rensner. in disput. Medica habita Basl. 1582.*

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(a) *Borellus* make mention of these *Worms*, though they were unknown to the Ancients. *Etmullerus* describes them at large in his *Special Practice*. By the Microscope they appear to have large Tails, gross Bodies, such as are represented here in Fig. 7. where *A* represents them as they appear without the Microscope, and *B* delineates them, according to their Appearance under the Microscope. *Etmullerus* calls them *Dracunculi*, but is mistaken in so doing, because he confounds them with another sort of *Worms* that bear that Name, which are not seen in this Country; but more of that by and by.

The *Crimones* are almost peculiar to Children upon the Breast; and are bred of an excrementitious Humour, sticking in the Pores of the Skin, as it commonly happens at that Age. When this *Vermine* attacks them, they fall away, but at the same time suck, and eat and sleep tolerably well; for the leanness and consumption of their Body, is only occasion'd by the *Worms*, their wasting the nutritious Juice allotted for the Parts. But after all, there are some Cases in which these *Worms* hinder the Children to Sleep, and torment them so much that they cry Night and Day.

(b) *Borellus* says, a Brother of his being attacked by this *Vermine*, cryed perpetually till

(a) *Borel Hist. & Observ. Medicophys. Cent. I. Obs. 8.*

(b) *Ibid.*

they were drawn out by rubbing his Body with Honey : He adds, that at first the Worms shot out their black Heads, and afterwards came out upon a rough Cloth that was rubbed along the Back. When Children are taken ill of this Distemper, commonly the Mothers or Nurses impute it to imaginary Causes, and tease their poor Infants with a thousand superstitious Remedies.

The *Wax-Worm* is so called, because stale Wax is most apt to be eaten away by this Worm. It passes for the least of all Animals, and upon that account is commonly styled *Ἀνάγκη*, i. e. a Thing that cannot be divided. It creeps along under the Skin, gnawing it by degrees, occasioning a vehement itching, and raising little Blisters, which discover the Worm when they're pricked. By a Microscope it appears to have six Feet plac'd by Pairs near the Head, with which it makes long Furrows under the *Epidermis*. See Fig. 8. The Ancients knew of this Worm, and *Aristotle* takes notice of it in the 31st Chap. of his 5th Book of his *Histor. Animal*.

The *Ox-worms* derive their Name from the *Oxen*, that are liable to them. They crawl under the Skin like *Wax-Worms*, but are larger, and occasion an itching almost all over the Body. Sometimes they pierce the Skin in several Places, and come out of their own Accord. *Alfaharavius*, *Avenzoar* and *Albucasis* take notice of 'em. The Distemper occasion'd

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caus'd by them is call'd *Passio bovina*, and
may prove of troublesome Consequence if it
be not taken Care of betimes.

The *Silk Worms* are not to be met with in
this Country; but in (a) *Aethiopia* and the
Indies they are very common. They resem-
ble (b) twisted Silk, and commonly breed in
the Legs and Thighs. They are very long;
some one, some two, some three, and some
four Ells long. The African Negroes are sub-
ject to them, and the Americans derive the
Distemper by Contagion from them; nay,
sometimes the Infection reaches to those who
are neither *Africans* nor *Americans*. Count
Scaghen of *Holland* told me, that in the *West-
Indies* he saw a Soldier that was born at *U-
trecht*, draw twenty three of these *Worms*
out of his Legs, some of which were above
two Ells long. They occasion Head-aches
and Vomitings, but after they are gone the
Patient recovers perfect Health. When they
are fit to be drawn, there rises a small Im-
psthume above one of their Ends: which
being opened, we take a round piece of Wood,
very small, about half a Finger long, and
twist about it whatever we meet with; then
we turn the Wood round, and the Body of the
Worms clasps about like a Thread: And thus
it was that the Soldier pull'd out his. This

(a) *Paul. Aegipet. l. 4. c. 58.*

(b) *Linea contracta modo. Amat. Lufic.*

Method is us'd for fear of breaking them, for if a part of 'em remain behind, it occasions dangerous Fevers.

'Tis very remarkable that this Worm has two Heads, not by one another, but one at one end, and another at the other end; and one of these Heads appears as it were dead, while the other shews it self to be alive. The Thighs of Goldfinches are lyable to much such a Worm as this. *Spigelius* says, He saw one in the Thigh of one of these Fowls that was a Foot long. Such a length would be incredible, if its Posture did not plead for it; for it lyes in a Spiral Posture; as *Spigelius* Testifies; and those in the Thighs of the *Ethiopian* mention'd but now, lye almost in the same Posture. That of the Goldfinches is thin, like a small Lute string: When it is full grown, it begins to move, and pierces the Skin, and sometimes comes out of its self: But oftentimes the Fowl pulls it out with its Beak.

To return to the *Silk-Worms*, some Authors doubt, if they're true Worms; but *Thomas Veiga* alledges, That whoever entertains such Doubts, has not taken a narrow View of 'em. 'Tis certain this Worm moves, and the above-mention'd Count *Schagen* assur'd me, He saw several of those move, that the Soldier drew out of his Legs. The *Arabians*, par-

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particularly *Avicenna* (a) calls this Worm by the Name of *Vena*, by reason that it resembles a small Vein. *Thomas a Veiga* says, *Albucasis* saw some that were twenty Hands long. Their Colour is reddish. *Amatus Lusitanus* takes notice of this Worm, and describes a way of drawing it out, which comes pretty near to that I mention'd but now. There's one thing very remarkable in his account, viz. That sometimes there's a necessity of imploying several days in drawing it out entire; which, in all probability, is occasion'd by attempting it too soon, before the Worm be ripe for drawing. An *Ethiopian*, says he, of 12 Years of Age, Servant to a Sea-Officer, being brought from *Memphis* to *Theffalonica*, complain'd at first of a great Pain in his Thigh; afterwards an Ulcer happen'd near his Heel, in which the Head of this Worm call'd *Vena* appear'd. The *Turks* perceiv'd what it was, and told that it was a dangerous and common Distemper in *Egypt* and the *Indies*. Whereupon a Physician was call'd for, that was practis'd in the Cure of this Distemper. He prescrib'd at first a convenient Diet; then he took hold of one end of this *Vena*, or rather of this little nervous String, and tied it to a very small Stick, which he turn'd round from time to time, till after some days, that he got at the other end,

(a) *Avicen. Fen. 3. Lib. 4.*

the whole being three Cubits long; by which means the *Ethiopian* was cur'd of his Pain, together with his Distemper, without applying any Cataplasm or Fomentation. So far *Lusitanus*. By his Words, one would think he takes this Worm only for a Membranous or Nervous Body, and not for a Living Creature: But he plainly asserts the contrary in what follows: Authors, says he, are in suspense as to the Nature of this Distemper, and are at a loss to know, Whether it is a Vein, a Nerve, or a Worm. As for my own part, I am an Eye-witness of the thing, and by consequence may justly demand more Credit than those who know it only by hear-say. I can assure, that it appears as a white and very delicate Worm, resembling a twisted Thread of Silk; when it comes out, that Part of it that is open to ones View, resembles a dried Nerve; and if it break and disunite from the rest, the Patient is much tormented both in Body and Mind.

This Worm is otherwise call'd *Dracunculus*, i. e. the little Dragon; a Name that *Et Muellerus* improperly applies to the *Crinones*, which differ vastly from this. *Ambrose Paræus* (a) after he has recited the Sentiments of most of the *Grecians* upon this Distemper, and disprov'd the Opinions of the Ancients, as he

(a) *Ambr. Par. lib. 8. cap. 13. de Tumoribus in Specie.*

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thought, adds, That this little Dragon is not
a Worm, nor indeed any Living Thing, but
only a Swelling and an Imposthume occa-
sion'd by too hot Blood. He speaks of it as
being a common Distemper in all Countries;
in which Point he is out, since it was a Dis-
ease peculiar to the *Indians* and *Ethiopian*,
according to the unanimous Testimony of all
the *Grecians* and *Arabians*.

Tho' *Paræus* pretends, That no Advances
should be made upon things that fall under
the cognisance of our Senses, without having
seen 'em with our Eyes; yet in this Point he
speaks what he never saw. In all probability,
says *Schenckius*, (a) he mean'd to confound
France with *Ethiopia* and the *Indies*. Others
are guilty of as great a Mistake in ranking this
Malady under the Head of the *Varices* or
Swellings of the Veins. Others, and in par-
ticular *Emullerus*, confound 'em with the
Crinones, which, as *Schenckius* well observes, is
comparing a Flie to an Elephant; for the *Crinones*
are very small, and the Worms we now
speak of are of an extraordinary Length.

The *Foot-Worms* are little Worms which
occasion painful Swellings, as big as Beans, in
the Feet. They are peculiar to the *West In-
dies*. *Thevet*, in his *History of America*, tells
us, That when the *Spaniards* were in the

(a) *Schenck. Obs. Med. l. 5. de Phelirias. Obs. 6. in fine.*

Country, they were seiz'd with these Worms and several Swellings in their Feet, and when they open'd the Tumors, found a very small white Animal within 'em, having a little Spot upon its Body. The Natives of that Country cured themselves by an Oil drawn from an untenantable Fruit call'd *Ghibon*; which Oil they keep in little Vessels, made of the Fruit call'd *Caramena*. A drop of this Oil put upon the Swelling, removes the Distemper in a little time.

The *Umbilical-Worms* breed in the Navels of Children, and give 'em a great deal of Trouble. They make 'em very lean, and throw 'em into an Universal Decay: The Lips become pale, the natural Heat dwindles, and the whole Body is shatter'd *Estmallerus* says, There's no other sign of this Worm but this, that if you fasten a Gudgeon to the Navel, next day a part of the Fish will be corroded. 'Tis usual to apply another next Evening; and thus to repeat the Application three or four times, both for ascertaining the Sign, and for extracting the Worm. Then they take half a Nut-shell fill'd with a mixture of the Powder of *Venice-Crystal* and *Savin*, with a little *Honey*, and apply it to the Navel. Thus the Worm being entic'd by the Honey, eats off the Mixture, which kills it. After all, they exhibit an absterfve Medicine to carry off the Worm.

I should be apt to look upon this Worm as
E 4 fabulous,

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fabulous, if the Testimonies of *Esmullerus* (a) and *Sennertus* (b) did not stagger my Judgment. The former assures us, That *Dr. Michael* cur'd several Children of it by the above-mention'd Method; and the other quotes the Ocular Testimony of *Bringerus*, (c) who tells us, That a little Girl six Months old being seiz'd with a Fever that did not yield to any Remedies, the Mother suspected she had a Worm in the Navil, and accordingly fasten'd a living Gudgeon upon the Navil for 24 Hours, that the Worm eat up the Fish, leaving nothing but the Bones, and then retir'd into the Vein, (as he calls it;) that the Mother renew'd the Application every day, and the same Effect still follow'd; that after 8 or 10 days, the Clouts falling off, drew away the Fish together with the Worm; that the Worm not finding re-entrance into the Umbilical Vessel was found dead upon the Child's Belly; that it was round and yellowish, about half a Foot long, and had a harder Skin than that of the common Worms.

Rupertus, a familiar Friend of *Sennertus*, tells such another Story of a Child of the same Age, that pass'd many Nights in watchful Pain, crying incessantly, and voiding

(a) *Ermull. de Morb. Infant.*

(b) *Sennert. l. 3. p. 1. de Morb. Abdom. cap. 4.*

(c) *Bring. in Epist. Obserr. Dom. Philip. Hoeckstetteri Decadi 6.*

Green and sometimes Ash-colour'd Excrements, resembling minc'd Meat. He tells us, That after exhibiting several Medicines to no purpose, they apply'd a Gudgeon to the Navil, and that in the space of two Hours the Fish was gnaw'd, so that a Pea might lye in the Cavity; that another being put in its room, was found so wasted next Morning that the Bones only remain'd; and after that, half a Nut-shell fill'd with a Paste made of the Powder of *Venice Crystal*, *Savin*, and *Honey*, being applied to the Navel, a part of the Paste was eaten up by next Morning; that the last Application being repeated three days successively, the same Effect follow'd for the first two days, but the third day the Mixture was found untouch'd: That this being taken for a sign of the Worm's Death, they gave the Child some *Harts-horn* and *Tansy-water*, and afterwards found a Worm upon the Child's Clouts, with its Head off; that this Worm was a hand long, its Head hard, and as big as a small Lentil, resembling that of a Flye; that they descry'd Eyes in it, and a regular Trunk not far from them; and that upon voiding the Worm, all the Symptoms disappear'd. This is related by *Rupertus*, (a) who adds, That the Head of that Worm was preserv'd, and to be seen at that day.

(a) *Sennert. l. 3. p. 10. c. 4.*

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There's one thing in this Story, that as I take it, is very improbable, *viz.* The voiding of the Worm by Stool: For if it was in any of the Umbilical Vessels, whether the hepatick Vein, or one of the two Umbilical Arteries, or if you will in the *Urachus*, (which after all, should not be reckon'd an Umbilical Vessel, since it is not hollow in Man;) 'tis not possible to conceive, that the force of any Medicine could convey it from thence to the Passage of the Guts, unless we suppose the Worm pierc'd thro' their Tunicles. Is not it then a more reasonable Plea, that these Umbilical Worms are not properly bred in the Navel, but in the Intestines; and that they break through the Gut and common Teguments to get at the Navel, from whence they return to the Intestine again? Which is not so very singular a Case; since, as (a) *Forestus* and several other Authors testify, *Worms* bred in the Guts do sometimes make their exit by the Navel.

'Tis true, *Eschallerus* and *Sennertus* take this for a particular Species of *Worms*; and the former says, (b) None but he and *Sennertus* have taken any notice of it. Besides the above-mention'd sorts of *Worms*, there is one call'd the *Pepercal*, which is not to be forgot, which is said to be found in all the Parts of

(a) *Forest. l. 21. Obs. 26. in schol.*

(b) *Etmull. de Morb. Infant.*

the Body in Pocky Cases. Of this I shall speak more at large in the Chapter Of the Effects of Worms.

ARTICLE II.

Of Worms bred in the Guts.

The *Gut-Worms* are of three sorts, some round and long, others round and short, and a third sort broad. The round and long ones breed in the small Guts, and sometimes in the Stomach; the second sort breeds in the *Intestinum Rectum*, and are call'd *Ascarides* from a (a) Greek Word that imports Agility and Action, for as much as these little *Worms* are in perpetual Motion.

The *Flat Gut-Worms* are hatch'd either in the *Pylorus* of the Stomach, or in the small Intestines, and are call'd *Tenia*, from their resemblance of a Riband; for that word in Greek signifies any sort of String that's broad and long. The *Tenia* is white and very long, and its Body is all over jointed. There are two sorts of *Tenia's*; one properly so call'd that neither moves nor has any form'd Head; the other call'd *Solium*, (b) from its being the only one of its Species in the Body, which

(a) *Ἀσκαρίζω*, to leap or dance.

(b) *Senn. lib. 3. Part 2. Sect. 1.*

58 *Of the different sorts of Worms,*

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(a) *Ἀσκήω*, to leap or dance.

(b) *Senn. lib. 3. Part 2. Sect. 1.*

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moves, and has a very regular round Head
resembling a Wart.

The *Tania*, properly so call'd, breeds in the
small Guts, from whence it extends to the
rest. Even when it is entire, we can descry
no Head upon it. It begins upon a small Point
like that of an Awl, which you may call its
(a) Head if you will, but still it does not bear
the Form of a Head. Along the middle of
its Body within, there runs a small Passage
like a Chain, which reaches from one end to
the other. This Passage is easily perceiv'd
when the *Worm* is but just voided; but after
it has been out of the Body any time, it
cannot be descry'd without holding the *Worm*
against the light. Mr. *Carliere*, Member of
the College of Physicians at *Paris*, has such a
Worm as this preserv'd in a Glass Vessel, which
I have narrowly survey'd.

The *Solium* is hatch'd in the *Pylorus*, and
from thence spins it self out along the whole
Series of the Guts. They are observ'd to be
of several Forms, but the two principal ones
are these: One has, as it were, a long Thorn
full of Knots running along the middle of its
Body upon the upper-side, according to *Spigelius's*
Representation, which is to be seen here
in Fig. 9. The other wants this Thorn; but
at every Joint upon the Sides, has a sort of

(a) Vide *Forest.* Lib. 21. *Observ.* 36. de *Intestinor. Affect.*

small Nipples open at the Point, in which we descry a blewish Vessel which runs a Cross half the breadth of the Body; and 'tis this Worm that is here delineated in the large Cut.

Some Authors give us another sort of Flat-worms, call'd *Cucurbitarii*, which are very short, and sometimes are link'd to one another like a Chain. They are delineated by *Aldrovandus* in his Treatise *De Vermibus in homine*, and *Spigelius* in his Treatise *De Iambri-co lato*, and here in Fig. 110. But that sort of Worms are taken for something form'd in the the Belly of the *Solium*, which some call its Excrements, others its Eggs; of which more anon.

These different sorts of Worms being thus accounted for, 'tis easie to know that the Worm voided by our Patient was a *Solium*; as having its whole Structure, a Neck, a Head, and Nipples between every Joint, without any visible Passage reaching from one end to the other, as in the *Tenia*.

Commonly the Worms are without Eyes; but this one has four very visible; unless we subscribe to M. *Mery's* Opinion, who thinks that what I take for the Eyes are its Nostrils. But the reason that perswaded me to give them in for Eyes, was, that before the Insect died, and a little after its death, those Parts which I call Eyes, were rais'd with an external Convexity, whereas afterwards when they

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they were dry'd up, they sunk and appear'd like Nostrils. Supposing them to be Eyes, we need not be stagger'd by their number of four, since the Spider has eight, and some Scorpions have four, others six, and others eight; and the Worms that gnaw Stones have ten. Upon the other side, if we take them for Nostrils, there is as little occasion for being amazed, since most Animals are as much determin'd to two Eyes as to two Nostrils.

This Worm, as I told you above, did not come forth whole; and, in all probability, would have been several yards longer, if it had not been broken. For as its Tail is very slender and narrow, so it is easie to conceive, that since the Place where it broke is pretty broad, it must have had some considerable extent from thence, to the end of the Tail, it being very probable that the Tail dwindles gradually in proportion to the Neck. I keep this Worm in a Glass-Vessel full of Brandy. As soon as I put it into the Brandy, it voided a white Liquor like Milk, which was nothing but the Chyle it fed upon in the Patients Body. I changed the Brandy, and then it voided more; and so on for three times.

The Body of this Worm is all over jointed, or divided into Rings. The Interval between one Ring and another resembles a little Belly, somewhat blown up in the middle of its breadth. On each of these Bellies there is
always

always one of the sides that has an Eminence like a Nipple, with a very small opening at top that's only discernable upon a narrow View, which is the end of a blewish Vessel lying across the Nipple: These Nipples are unequally rang'd, sometimes three on one side and two on the other; sometimes one on one side and two or three on the other, but never in corresponding Rows, as one may see in the Figure.

These Nipples must be look'd upon as so many Lungs, which receive the Air by the small Vents before-mention'd, which are like so many Wind-Pipes. Such a number of Lungs in the same Animal is not at all extraordinary; and whoever is acquainted with the Structure of Worms, knows that several Worms have a considerable number of Lungs; and that oftentimes their whole Body from Head to Foot, is one Chain of Lungs. You may consult *Malpighius's* Treatise of the Silk-Worm.

The Skin of this Worm is extream hard, smooth and white; its Body is transparent like China-Ware, and discovers nothing across it, but the above-mention'd blewish Vessel, that runs along half the breadth of the Body. I expected to have found some Organ in dissecting it, and with that view desir'd M. Mery, Fellow of the Royal Society, to assist me. Accordingly we cut up half an Ell of it, and examined it very narrowly in the

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the Presence of *M. de Fermeluy*, Member of the College of Physicians at *Montpelier*, who has added to his Perfect Knowledge of the *Humane Body*, several curious Pieces of Knowledge, relating to the Structure and Mechanism of Insects : but could descry nothing with all the Microscopes we could use. We only perceived all over it a heap of small Globular Bodies, resembling Corns of Millet, but very round. I cannot find a better Parallel for these Globular Bodies, which I traced very nicely with a Microscope, than that cluster of Eggs found in Carps. They seem to be pil'd up in the same manner, and to be distinguished one from another.

M. Bellestre, Member of the Colledge of Physicians at *Paris*, a Man admirably well vers'd in Physicks, examined these Globular Bodies, along with me ; and is of Opinion, That they are Eggs, and not Glandules ; which seems to agree with what *Hippocrates* and *Aristotle* relate of this Worm, and Experience confirms, viz. that those who are troubled with it void along with their Excrements an infinity of small Bodies, like Cucumber-Seeds ; for these small Particles may well be the same very Eggs enlarged in the Intestine after their coming out of the Worm's Belly. These Eggs are so numerous in the Worm, that if you touch them with the Point of a Pin, that which sticks to the Pin, though no bigger than a grain of

of Dust, would appear under a Microscope to be an incredible Pile of small Eggs, separated one from another; so that if we suppose these Eggs to furnish the small Seeds found in the *Excrements* of the Patient, we need not wonder that it gives them in such abundance.

Hippocrates (a) says, 'tis an error to take these little Particles to be a production of the *Worm*: but it is presumed that if Microscopes had been used in his time, and if he had seen the Experiment I mentioned but now, he would have been of another mind. This is easily infer'd from the reason that he gives for his Opinion: For, says he, how could so flat and small a *Worm* contain such a number of Eggs, as to produce all these *Grain-like* Particles in the *Excrements* of the sick Person? *Aristotle* (b) speaks of these little Bodies, in his *Historia Animalium*, and says, they are the *Genuine Production* of this *Worm*. As for their passage from the *Worm*, 'tis probable they issue forth through these little Holes in the Nipples, or perhaps by some passage hid under the Rings of the Joints, for these Rings may be like the Gills of Fishes, which open and shut.

(a) *Hipp. l. 4. de Morb.*

(b) *Arist. Hist. Animal. l. 4. c. 19.*

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When the *Eggs* are voided by the *Worm*, they grow bigger, and not finding sufficient Nourishment in the Guts for spreading and hatching their *Worm*, are drag'd out along with the *Excrements*. The reason why they find not sufficient Nourishment in the Guts, is, because it is consum'd by the *Worm* from whence they proceeded: for it is to be observed that this *Worm* feeds upon Chyle; and accordingly it was full of it, and voided a great Quantity when I put it into Brandy, as I intimated but now. Now the Chyle being a Juice, that is only made in very small Quantities at a time, as we may easily infer from the abundance of Grounds voided by the *Intestinum Rectum*; it is impossible that the *Worm* feeding upon it should leave sufficient Nourishment, for such an infinity of off Productions.

This *Worm* is nourished in the *Pylorus*, where its Head and Neck lies; from whence we may safely infer, that it easily consumes the greater part of the Chyle, since it takes it before it arrives at the *vasa lactea*. It may be questioned, how it can reside in the *Pylorus*, which shuts it self so close; but the smallness of its head, and the fineness of its Neck will account for that difficulty.

The *Solium* meets with the Chyle in the *Pylorus*, that is not yet mix'd with Bile, which perhaps is the occasion of its Residence in that Place: for a little lower the Bile runs from the
Liver

Liver into the *Duodenum*, and mingling with the Chyle imparts to it a bitterness, that renders it less proper for the Nourishment of this Worm; which agrees with the Opinion of some Modern Authors, and among others *Hartman* (a) who says, that the Obstruction of the Gall-Bladder is the occasion of Flat-Worms. In effect, we may say in General, that the Gall is an enemy to all Worms; and that if any of these Animals do sometimes ascend from the Guts to the Stomach, that only comes to pass when the *Porus Biliaris* suffers an Obstruction, as *Fabricius* (b) asserts.

'Tis true, Worms have been found in the Gall-Bladder, but that happened only in those who dyed of Dropsies, in which cases that Bladder is fuller of Phlegm than of Gall, as the same Author observes. Several Experiments make it out that Gall is the aversion of all Animals, particularly this, that if you put Leeches into a Porringer full of Water, the upper brims whereof are daubed with Gall, not one of them will offer to get out.

Though the Head and Neck of this Worm is lodg'd above the *Pylorus*, yet it scarce ever comes forth by the Mouth, by reason that the remainder of its Body, is too large and long to make good its passage.

(a) *Hartm. pract. Chym. p. 202.*

(b) *Guilielm. Fabric. Centur. 2. Obs. 72.*

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Our last advance of the manner in which this Worm consumes the Chyle, justifies our former Assertion, that this Insect is always alone without any other Companion of its own Species, as *Spigelius* (a) assures us; from whence, as I conjecture, it derived its Name *Solium* or *Solitary*.

The Moderns are not the only Authors of that Observation. *Hippocrates* was acquainted with it, and is so far from calling it in question, that he supposes it as unquestionable: for in proving that the above-mention'd *Cucurbitini*, are not the Eggs of the Insect, he says, (b) how could so great a number of Productions be derived from one Animal? Now if he had thought there might be more Worms than one of this sort in the Body, he had never argued in that Fashion.

This Worm, as I intimated above, made a great deal of Motion after its being voided; but 'tis very observable that its Motions were made Arch-ways: Sometimes the Head and Neck advanced, and drag'd forwards the rest of the Body; sometimes the Insect stood still, but being touch'd renew'd its Motion: In which it differs widely from the common *Tania*, which does not move at all, and seems to approach nearer to the Nature of a Vegetable, than that of a living Creature, as *Platerus* observes.

(a) *Spigel. c. 10. de lumb. lato.*

(b) *Neq; enim ab uno animali tot pulli generari possunt. Hip. l. 4. de Morb. art. 27.*

Some Moderns have confounded the *Solium*, call'd by the Ancients by the general Name of the *Broad Worm*, with the common *Tenia*; and sometimes with the *Cucurbitini*; particularly *Fernelius* (a) *Perdulcis*, and some others, who falsely imagin'd that the broad and long Worm spoken of by the Ancients, was only a Chain of the *Cucurbitini* link'd to one another.

But the Matter of Fact before us, does sufficiently make out their Mistake. I do not think it strange that *Aetius*, *Paul Eginette*, *Arnoldus de Villeneuve*, *Monardus*, *Trallianus*, and *Aldrovandus* (b) own, that there's a broad Worm of extraordinary Length, different from the common *Tenia* and the *Cucurbitinus*: From the former in this, that a *Tenia* properly so called, does not move, and wants both the Nipples and the Form of a Head, and has a visible Passage reaching from one end to the other, which is not in the *Solium*; from the *Cucurbitinus* in this, that this is nothing else but the Eggs of the *Solium*, grown to a greater Bulk without the *Solium's* Body, and sometimes so link'd to one another that they appear in the Form of a Chain, as it is here represented, as well as in *Aldrovandus* and *Spigelius*, as I intimated above. So that these *Cucurbitini* are the same thing with the Matter that's voided in the

(a) *Fernel, de Morb. Intestin. Pathol lib. 6. cap 10. Perdulc. Univers. Medic. lib. 13. cap. 21.*

(b) *Aldrovand. lib. 6. de Insect. Cap. 2. Art. 2.*

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Form of Cucumber-seeds by those who are troubled with the *Solium*. The Portions of Matter composing the Chain of these *Cucurbitini*, have a different Figure from those enclosed between the Joints of the *Tania* and the *Solium*. Do but cast your Eyes upon the large Figure here annex'd, and compare it with *Aldrovandus* and *Spigelius*'s Figure of the *Cucurbitini*, and you'll find they have no resemblance at all.

In the Chain of the *Cucurbitini*, we meet with neither Head nor Neck; whence, we may guess what it is; and the Portions of Matter that this Chain is made up of, seem only to stick to one another, as the dung of some Animals, especially Dogs; the Parts whereof stick together much after the same manner, as those of these pretended Worms, which are only to be look'd upon as the Excrements, or as the Eggs of the Broad-worms: so far ought we to be from confounding them with the Worms themselves, as some Moderns do, who might have been more exact upon the Point. *Spigelius* and *Sennertus* did not split upon this Errour. 'Most Authors, says *Spigelius* (a), have by a manifest Errour confounded the Broad-worm with the *Cucurbitinus*.

(a) *Spigel. de Lumb. lato. cap. 3.*

Some, says *Sennertus*, (a) imagine that the Intervals of the broad Worms are the *Cucurbitini*; but all these Intervals taken together, make but one Worm with several Knots, which indeed come near to the Figure of Citrul-seeds, but in effect are the real Joints of the Worm.

Benivenius, says he, saw one of these broad Worms, and took it for so many *Cucurbitini* link'd together: But *Sennertus* laughs at his Opinion, and asserts, That it was only one Worm and one entire Body. The same Author checks *Gabucinus* for the same Mistake. *Gabucinus*, says he, seeing the Motion of this Worm to be more manifest in the Intervals of the Knots than elsewhere, fancy'd that the Motion was not owing to one broad Worm, but to several *Cucurbitini* join'd together: But after all, these Intervals are not particular Worms, but so many Parts of one broad Worm.

To all which I add, That the Motion of our Worm is more than sufficient proof, That it was all one Animal; since 'tis impossible for a Chain of Worms link'd together to move Arch-wise, so that the Remainder of the Body should follow the Motion of so thin a Head and Neck, without the whole were but one Body. Besides, in this Worm we

(a) *Senn. l. 3. Part. 2. Sect. 1. Cap. 5.*

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meet with such Proportions as remove all Doubts of its being one Animal.

Lusitanus tells a Story of a Lady that voided a Worm like to this. A Lady, says he, that was otherwise very well, was troubled with a gentle Cough, and soon after voided by the Mouth a Living Worm of an extraordinary Length: 'Twas four Cubits long, half a Nail broad, very white, resembling the Substance of the Guts, and in some measure the Cast-coats of an Adder: Its Head was like a Wart, its Body broad and flat, and gradually smaller towards the Tail. This Worm, continues he, was only one Body made up of several Joints like Gourd-seeds, (a) which contained nothing within 'em, [because the Worm was very flat. This Account comes near to that of our Worm, within which we could discover nothing, as I intimated above. Indeed, that mentioned by *Lusitanus* issued forth by the Mouth, which happens but very rarely, for commonly it is voided by Stool.

Rondeletius (b) makes mention of such another Worm voided by a Soldier's Wife in the Camp at *Perpignan*; which he dry'd and preserv'd. *Thaddaeus Dunus* (c) writes, That a young Woman having been ill three Years of a broad

(a) *Amat. Lusit. Curat. Medic. Cent. 6. Curat. 74.*

(b) *Rondel. lib. Diagnosc. Morb. Cap. 17.* (c) *Thadd. Dun. Cap. 15. Miscell. Medic.*

Worm, sent him a piece of a Worm that she had voided, which was five Ells long, the like of which he had never seen before. He adds, That in 1571 this Woman died; and a few days before her Death, voided another Piece of a Worm that was twenty Ells long, which he saw after it had been dried in an Oven to preserve it.

Gesnerus (a) says, himself voided one that was thirteen Cubits long. *Quenzius* in his Observations tells us, That a Gouty Person being purg'd in order to prevent the Paroxysm, voided a broad Worm; upon the sight whereof he could not but admire the ignorance and boldness of some Modern Physicians, that dare to charge *Pliny* with a Lie (b) for writing that he had seen a Worm thirty Foot long and upwards. *M. Hartsoeker* writ to me, as I intimated above in the Second Chapter, That he saw one at *Amsterdam* that was more than 45 French Ells in length; which justifies *Pliny's* Assertion.

Some Authors, in describing this Worm, say, it is *Squamosus*, not that ever they saw Scales upon it; but because it is all over Jointed, and that must be understood to be the meaning of the Word *Squamosus*. Thus *Thaddæus Dunus* says, *Squamosus est, nisi rectius Articulatus dicatur.*

Mercurialis (c) alledges, That the broad

(a) *Gesner. lib. 3. Epist. ad Fabric.*

(b) *Plin. Histor. Natur. lib. II. cap. 33.*

(c) *Mercur. lib. 3. de Morb. Puer. cap. 5.*

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Worm is not a *Worm*, but something like a *Worm*, *Quidpiam Animal referens*. 'Tis manifest, that Author is mistaken, since the *Worm* spoken of by *Lusitanus*, and this of ours, have Heads, and came forth alive; especially the latter, which mov'd so sensibly: and several other Authors speak of such *Worms* which they saw move.

Gabucinus (a) speaks of one of this sort of *Worms* that liv'd a whole day in a Kettle full of *Water*; and *Spigelius* tells us, That in August 1608, a German Lady having eat a Lettuce Sallad at Supper, was seiz'd with a violent Shivering, which was follow'd by a Fever and vehement Collick; that the Lady by pressing her Belly with her Hand in the extremity of Pain, gave her self a Looseness, which together with a quantity of *VVater* and Bile, brought forth a Piece of a broad *VVorm* five Cubits long. The Lady had a Sister by her, who fearing that it was a Piece of her Guts, instead of drawing it quite out, indeavour'd to put it up again, and by that means broke it, so that the last End retir'd into the Body. The Piece that was broken off, they put upon a square Brick, and presently it turn'd it self into Spiral Figures; afterwards they put it in *VVater*, where it turn'd it self into a Circle, and mov'd no more.

(a) *Gabuc. cap. 3. Comment. de Lumb.*

Now 'tis plain, it could never have made these Motions if it had not been animated.

It might be alledged, That *Mercurialis* speaks only of the common *Tenia*, when he says, a flat Worm is an Animal; but his quoting *Hippocrates* is a certain Proof that he meant the same Worm that *Hippocrates* speaks of in his Fourth Book of Diseases; and that is what we call the *Solium*, which is a true Animal. 'This pretended Worm, says *Mercurialis*, is no Animal, but something that resembles it; as *Hippocrates* has well said, continues he, it is a sort of Matter bred in the Intestines, which in some measure represents the Figure of an Animal.

This Author, in these words, shews that he quotes very carelessly. *Hippocrates* does not say, That it is Matter resembling an Animal; but on the contrary, that it is an Animal resembling a white Skin separated from the Guts, which is a quite different Story. Besides, *Hippocrates* calls it (a) *Tanta magnitudinis Animal*, a Creature of a prodigious Size; and after that, in explaining how it is bred in the *Fetus*, or the Mother's Belly, says, That the Mother's Milk and Blood being corrupted, by reason of their superfluous Abundance; the sweet Part of the Milk and Blood becomes *Pus*, or corrupt Matter, in

(a) *Hip. lib. 4. de Morb. Artic. c. 27.*

which

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which the Creature is hatch'd; *Animal isthic Generatur*. Thus we see, that we ought not always to trust to those who quote *Hippocrates*. Every one would have him on his side, as if it were Criminal to be of a different Opinion from him, and with that View fasten several things upon him that he never said. I make this Remark, because *Mercurialis* is not the only Author that has treated him in this manner.

Spigelius and *Sennertus* think more justly upon the Point than *Mercurialis*, who, by the way, contradicts himself plainly (a) a few Chapters after. 'It is not to be doubted,' says *Sennertus*, (b) but that this sort of *Tania* is an Animal, as appears by its Motion; 'which, tho' it be slower than that of the 'common Worms, is still a real Motion, as 'several Authors have observed. On some occasions this Worm has been seen to wind it self round in the form of a Ball, when expell'd by Medicines; and doubtless 'twas to promote its Motion, that Nature gave it these Incisions, Knots and Intervals, by which it is mark'd across like other Insects, and which some have took for the *Cucurbitini*. *Hippocrates* (c) observed the Motion of this Worm; 'if we administer, says he, an Ex-

(a) *Mercur. lib. 3. de Morb. Puer. cap. 7. de differ. Lumb.*

(b) *Senn. Lib. 3. Part 2. Sect. 1. c. 5.*

(c) *Lib. 4. de Morb. Artic. cap. 27.*

‘pulsive Medicine to one that’s troubled with
‘this broad Worm, sometimes the Worm
‘wraps it self up in a Ball, and so comes
‘forth; whereupon the Patient is cured.
Schenckius in the Third Book of his Treatise
of Worms, says, He saw one voided by a
Lady at the Mouth, which was wrap’d up
in the form of a Ball, and had a visible Pal-
pitation; which they opened out, and found
to be three Ells long.

I told you in the beginning of this Chap-
ter that the long and round Worms are
sometimes bred in the Stomach: However,
there are Physicians who alledge, that no
Worms are bred in the Stomach, going upon
the Authority of *Galen*, who in speaking of
the different Diseases that attack the several
parts of the Body, assigns no place for the
Worms, besides the Guts. ‘There are, says
‘he, (a) Diseases peculiar to every part, as
‘the Stone is to the Kidneys and Bladder, the
‘Cataract to the Eyes, and Worms to the
‘Intestines. But by the Intestines we may
understand the whole Passage, which makes
but one continued Body from the Mouth to
the *Anus*; and thus Worms may still be
bred in the Stomach, with a *Salvo* to *Galen*’s
Authority.

(a) *Galen*, l. I. de locis affect. c. 5.

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But after all, if one is unwilling to embrace this Account of the Matter, and if it is true that *Galen* pretended only to speak of that part of this Passage, which reaches from the Stomach to the *Anus*, and is properly called by the Name of the *Guts*, it is probable that he spoke in that fashion, because *Worms* are commonly bred in the Guts, which is enough to justify his way of speaking: For, in fine, *Galen*, never designed to confine the Generation of *Worms* to the Guts, and whoever fastens that Error upon him, must never have read his Writings. I do not pretend that *Galen* is infallible, if at any time he is mistaken; but is that sufficient to condemn him, without giving him a fair Tryal? The Scholastick Physicians distinguish between *Vermes* and *Lumbrici*, in order to justify this Passage of *Galen's*, as if the *Lumbrici* were properly bred in the Guts, and *Galen* had only spoke of these: But the Allegation is only a School-Quibble, which will not hold any where else than upon the Forms, where speaking is more in vogue than reasoning.

Some of those who are against the Generation of Worms in the Stomach, alledge that the Stomach does not afford any Matter proper for the Nourishment of Worms; but I would fain know if that of the Intestines is more proper, while it is mixed with Gall issuing from the Liver. There is, *continue they*, an Acid in the Stomach, that stifles the breeding

ing of *Worms* in it: but pray tell me then, why the Acid of Vinegar does not hinder the Generation of *Worms* in it? But after all, we ought to appeal to Experience. Now Experience vouches, that *Worms* are bred in the Stomach, for such have been often found in dissecting dead Bodies, and that in such Circumstances as do not admit the least doubt of their breeding there (a): I remember I once found a great Number of very small *Worms* in the Stomach of a Dog, in such Circumstances that one could not suspect that they ascended from the Intestines, for these *Worms* were hid under a Membrane that we were obliged to cut before we could come at them. This puts me in mind of what *Kerkringius* (b) reports, viz. that in dissecting a *Fetus* of six Months and a half, that had a Stomach thrice bigger than at that Age it ought to be, he found a Membrane in its Stomach which contain'd *Worms* like to those customary among Children.

Graftius (c) has a Story of a Child, that comes in very patly upon this occasion. A Child of twelve years of Age in *Montpelier*, being very much subject to *Worms*, died, says he, with a swelling above the Pubes; We opened its Body, and found that the Hu-

(a) *Petr. Aponens. Differ. 101. conciliat.*

(b) *Obs. Anatom. 9.*

(c) *Apud. Guil. Fabric. Cent. 2. Obs. 71.*

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mour was occasioned by a Collection of undigested Food mix'd with some Worms; seeing this we apprehended the Stomach might be disorder'd, and opened it; accordingly we found in it little Balls of small Worms, and near the bottom on the left-hand, a hole that one might put his Finger through, which was made by these Worms; through which a part of undigested Food, and some of these Worms had slipped down to the Region of the Pubes, where they caused that Tumor: for we view'd the Intestines and found them sound and entire. I pass over many other Examples, for fear of being too large upon a Subject that I designed only to treat by the bye.

Our next Business is to take a View of the different Forms assumed by Worms in the Body of Man:

ARTICLE III.

Of the different Forms assum'd by Worms.

The Worms that breed in Humane Bodies, whether within or without the Guts, do oftentimes assume monstrous Figures as they grow old; some take up the Shape of Frogs, others of Scorpions, and others of Lizards. Some shoot forth Horns, others acquire a forked Tail; some assume Bills like Fowls, others are covered with Hair, and become all over

over rough; and others again are covered with Scales, and resemble Serpents. Several Authors furnish us with Instances of these monstrous Worms, particularly *Vuierus* (a), *Montuus* (b), *Rulandus* (c), *Gabucinus* (d), *Monardus* (e), *Benivenius* (f), *Rhodius* (g), *Panarolus* (h), *Marcellus Donatus* (i), *Gesnerus* (k), *Dodonæus* (l), *Hollerius* (m), *Borellus*, &c. Among others *Cornelius Gemma* speaks of a Girl of 15 Years of Age, that voided a Worm resembling an Eel, excepting that it had a Tail divided into Plumes, and all over rough. Its Figure is to be seen in *Aldrovandus* his Book of Insects, p. 764. and here in Fig. 11.

These monstrous Worms are drawn up in ten Classes, viz. Frogs, Lizards, Serpents, Eels, Worms with forked Tails, those with 100 Feet, Stag-flies, Caterpillers, and Scorpions; not that these Worms are in effect Frogs, Scorpions, &c. but that they resemble those Animals. Now, as I intimated above, all these different Figures are only assumed as

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- (a) Lib. 4. cap. 16. de Prest. Dem.
 - (b) Mont. lib. 4. cap. 19. Anat. Morb.
 - (c) Gabuc. Comment. de Lumb. cap. 13.
 - (d) Gemm. lib. 2. cap. 2. Cosmocris.
 - (e) Monard. lib. 7. de Simplic. Medicament. ex novo orbe delat.
 - (f) Beni-ven. de Abditis, cap. 2.
 - (g) Rhod. Cent. 3. Obs. 19.
 - (h) Panarol. Pentecost. 5. Obs. 13.
 - (i) Marcell. Donat. Hist. Mirab. lib. 4. cap. 26.
 - (k) Gesner. l. 8. Ep. p. 94.
 - (l) Dodon. Annot. ad cap. 58.
 - (m) Holler. lib. 1. de Morb. Intern. cap. 1.

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they grow old; just as a Man has no Beard till after a certain Age, several Animals shoot forth no Horns till some time after their Nativity, Ants acquire their Wings in time, ancient Caterpillers turn into Butterflies, and a Silk-worm undergoes several Changes known to all the World. There's no occasion to think it strange, that Worms in Humane Bodies should assume such extraordinary Figures when they are of long standing. I do not now speak of Animals received into the Body by the Mouth: That is not the Subject in hand. *Hippocrates* (a) tells a Story of a Young Man that being in Drink, fell asleep, into whose Mouth, during his Sleep, a Serpent entered and penetrated to the Stomach, and occasioned his Death with violent Convulsions. Many such Instances are to be met with in Physical Writings; but I wave 'em all, as being Foreign to my purpose, which is only to treat of such Worms as are bred within us.

The different Forms of *Worms* are not owing to the simple spreading of the Parts, which break and force thro' the Skin that covers the Insect, called by Naturalists *Nympha*. After *Andreas Libavius*, *Malpighius* and *Swammerdam* were the first that rejected the chimerical Transformation of a Caterpillar into a But-

(a) *Hipp. Morb. Epidem. Lib. 5. Art. 6.*

terflie, and of some such other Insects; and made it out, that all the Parts of the Butterflie were endos'd within the *Nympha* of the Caterpillar. In effect the Alterations that happen to Insects do not differ from those of Plants and Flowers; for the Insect lyes hid in the *Nympha* as the Flower in the Bud.

This may direct us in judging of some Histories that are given us of strange Animals, such as Serpents and Dragons bred in Humane Bodies; for instance, of that in *Plutarch*, (a) that the Guards that watch'd *Cleomenes's* Body, while it hung upon the Gibbet, saw a Serpent come out of his Body, and make several Rows round his Head, and cover his Face; that *Ptolomy* being acquainted with the Matter, took it for a Prodigy, signifying, That the deceased was a Favourite of the Gods, and of a Nature above the common pitch of other Men. The Wisemen being consulted upon the Point, undeceived him of his Error, by giving him to know, That the Corps of some Animals produce Wasps, others Stag-flies, others Bees, in like manner as that of a Man did in a peculiar manner sometimes produce Serpents. The like Judgment we may make of the Serpents that were found in the Tomb of *Charles Martel*, which were bred of his Body; for doubtless, those Animals were

(a) *Plutar. in Cleomen.*

only large Worms that had assumed some extraordinary form Length-ways. All the several sorts of Worms set down in this Chapter, make a Man lyable to several Diseases. It remains therefore to enquire into their dangerous Effects.

CHAP. IV.

Of the Effects of Worms in Humane Bodies.

WE shall divide this Chapter into Two Articles; one of the Effects of Worms bred out of the Guts, and the other of the Effects of those which breed in the Guts.

ARTICLE I.

Worms bred without the Guts are already drawn under the following Heads: The *Encephali*, properly so call'd, the *Rinari*, the *Auricular*, the *Dentarii*, the *Pulmonarii*, the *Hepatick*, the *Cardiack*, the *Sanguine*, the *Vesicular*, the *Spermatick*, the *Elcophagi*, the *Cuticular*, the *Umbilical* and the *Venereal*.

The Disorders occasioned by the *Encephali* or Brain-worms, are extraordinary Headaches, and sometimes hot Fevers, as I observed in the preceding Chapter.

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The Effects of the *Rinari* or Nose-worms, are much of a Piece with these.

The *Auricular* or Ear-worms, occasion violent Pains, and sometimes an extraordinary itching, in the Ear.

The *Dentarii* or Tooth-worms, occasion a deaf Pain mix'd with an itching in the Teeth; they insensibly consume the Teeth, and cause a hideous Stink.

The *Pulmonarii*, or Worms in the Lungs, occasion violent Coughs; sometimes they ascend the Wind-pipe, and by their Prickings occasion such Motions as are customary, when a crum of Bread, or a drop of Wine or Water falls into the *Larynx*.

The *Hepatick* or Liver-worms, cause a heaviness of the Liver, with Shootings upon the Right-side; and, according to some Physicians, a sense of Heat all over the Body with great Melancholly. I cannot tell whether this last Observation holds with respect to Man; but I know, that in *Borellus's* Observations, (a) we read of a Dog, in whose Liver a great rough Worm was found, that used in time of Rain, always to throw himself under the Gutters, and was so pleas'd with being there, that they could not drive him from thence; and at the same time, the Dog was very Melancholy, and avoided the company of other Dogs. M.

(a) *Borell. Obs. Medico-Phys. Cent. 2. Obs. 23.*

Tardin, a *Tournon* Physician, was the Man that open'd the Dog, and found the Worm in his Liver.

The *Cardiack* or Heart-worms, occasion Tremblings, Swoonings, and the Lunatick Disease, falsely imputed to the Moon. Sometimes they bring sudden Death.

The *Sanguine* or Blood-worms, occasion no pain: They keep within the Vessels, and swim in the midst of the Blood, as Vinegar-worms do in Vinegar. They are very slender and small, and in all probability being convey'd to the Heart along with the Blood, accompany it in its Course thro' the Arteries, and its return thro' the Veins. 'Tis probable, that sometimes when they are too big to be receiv'd by the Veins, they remain in the Flesh, where they occasion Fellons, Rifings, and sometimes an universal Scab. 'Tis possible the *Cardiack* Worms are only these stopp'd in the Furrows of the Ventricles of the Heart, where they afterwards grow bigger, and together with their Growth gain Strength to gnaw the Heart it self.

The *Vesicular*, or those bred in the Kidneys and voided by the Bladder, do sometimes occasion a Suppression of Urine, and violent Pains in the Neck of the Bladder, when one makes Water. Sometimes a pissing of Blood is cured by voiding Worms thro' the Ureters. *M. Thomas Mermann*, head Physician to the Duke of *Bavaria*, being concern'd with a Patient

Patient that was ill of a *Dysury*, caus'd her to void by Urine, a Worm that was a Cubit in Length; and after that cur'd her, with some evacuating Medicines.

The *Spermatick* or Seed-worms, according to the Opinion of some Authors, tickle the Parts in which they're lodg'd, and by that Means occasion excessive Venery: But this Opinion is as unreasonable, as that which affirms, that Vinegar would not sting, if it were not for the Worms 'tis possess'd of.

The *Elcophagi* gnaw Ulcers, and eat away the bad Flesh; but at the same time give Rise to a new Corruption, by depositing Excrements in the room of it.

The Effects of the *Cuticular* and *Umbilical* Worms are sufficiently accounted for in the *First Art. of Chap. 3.* I shall only add one thing with reference to the *Crinones*, viz. That *Lewenboeck* alledges, they are true Hairs and not Worms: He says, that when he examin'd 'em with a Microscope, he saw something like a Head that might encourage the Belief of their being Animals; but that the Appearance of the Head was only occasion'd by the different Colour of that End of the Hair that stood out; and that after all, he could never perceive any Motion among 'em, or any Form of an Animal. The *Crinones* are pretty common at *Aix-la-chapelle*, where it is customary to rub the whole Body over with Honey near the Fire, by which means the

Grinones come to appear more visibly; and then they cut 'em off with a Razor, thinking that they cut off the Heads of so many Worms, tho' at the same time they're only the Hairs that the Honey has caus'd to grow; for 'tis well known, that Honey makes the Hair grow presently. The probability of *Lewenhoeck's* Opinion, is confirm'd by this, That the Hairs when shooting forth under the *Epidermis*, may occasion many Inconveniences, if they have not a free egress. That Author quotes an Instance of a Man of Quality, who upon a recovery from a grievous Fit of Sicknes, was troubled with an itching all over his Body, notwithstanding that he had retriev'd his Appetite, and other Signs of Health: His Physicians imputed the itching to the Acrimony of his Blood, and pretended to cure it by correcting that Acrimony. *Lewenhoeck* differ'd from them; having heard the Patient say, that during his Illness, his Hair fell, he maintain'd that the Itching was occasion'd by the fresh growing of the Hairs that likewise fell all over his Body during his illness, which upon their new growth not meeting with an easie Egress, prick'd the outer Skin, and so occasion'd an itching.

This thought is back'd by Experience, for we seldom fail to feel a violent itching towards the end of VVinter or the Spring-time, that being the Season in which the Hairs
renew

renew their Growth : for 'tis certain, that all the Hairs of the Body, except the Beard and the Hair of the Head, fall off every Year and grow afresh ; and there are some Persons that are much out of order upon the return of the new Hairs, though they be almost unperceivable ; just like the Fowls that are sick, when they cast their Feathers.

As for the *Venereal* VVorms M. *Hartsoeker* (a) is of Opinion, that they occasion all the Symptoms of Venereal Diseases ; that they corrode all they meet with ; and that Mercury cures those Diseases only by killing the VVorms, that keep them up. This Opinion, I take it, is very probable. I have seen Persons troubled with those Diseases, very much benefited by taking Medicines against *Worms* ; particularly a young Man having taken for a month together a Ptisane made with *Gentian*, and purged now and then with *Aloe*, which are sovereign Remedies against VVorms, found himself so well that a Ptisane of *Ghina* and *Sarsaperilla* taken for 15 Days after perfectly cur'd him : and 'tis now three Years since he recovered his Health, which he enjoys to this Day, without the least Symptom of his former Distemper. VVe observed in the third Chapter that the *Spermatick Worms* are not met with in those who are

(a) See his Second Letter.

tainted with the *Venereal Diseases*, which ought to convince us, that the *Venereal Worms* are of a different Nature from them. Besides the *Spermatick Worms* are only found in those who enjoy perfect Health, as I remark'd in the same Chapter.

ARTICLE II.

Of the Effects of WORMS bred in the Guts.

The Worms of the Intestines are of three sorts, as we observed in the 3d Chapter. Some are round and long, some round and short, known by the Name of *Ascarides*, and some broad. In speaking of their different Effects, we shall begin with the long and round, and then proceed to the *Ascarides*, and conclude with the *Solium*.

The Disorders occasioned by the round and long Worms, are a squeamishness, Vomiting, a slowre Breath, Gripings, Chollick-Pains, a Loosness, Tenesmus's, a Swelling and Distention of the Abomen, Swoonings, Hiccoughs, a loathing of Meat, and sometimes on the contrary a Dog-hunger, dry Coughs, Shiverings, Erratick Fevers, Convulsions, the Falling-Sickness, a Giddiness and Staggering when one stands, and sometimes a Privation of Speech. Upon this Occasion I call to mind that *Alexander Benoit*, a Physician, speak:

speaking of the Causes of Dumbness, says that sometimes it is occasion'd by Worms in the Guts; and quotes an Example of a young Girle, that was dumb eight Days, and recovered her Speech, after she had voided 40 Worms by Stool. *Forestus* has such another Instance of a Child of twelve years of Age, that became mad in a malignant Fever, and was speechless for a Fortnight, and retriev'd both his Speech and his Senses, by voiding an infinity of Worms by Stool, upon the Administration of a Medicine, proper for that purpose.

As for the hunger occasion'd by *Worms*, 'tis remarkable, that some wormy Epidemical Diseases have been observed to occasion such a hunger, that they were known by the Name of the hungry Diseases. There was one of this Nature at *Saragossa*, of which almost all People died; and against which there could be found no better Remedy than *Bole Armeniac*, given sometimes alone, and sometimes mixed with Venice-treacle; which expell'd a great Number of prodigious *Worms*, and cur'd almost all the (a) Sick.

As for Convulsions, Worms in the Intestines are sometimes the Causes of such terrible ones, that you would almost take them for Signs of Demoniack Possession. Children

(a) *Forest. l. 21. Obs. 28. in Schol.*

troubl'd with *Worms* have been seen to double themselves backward in such a manner, that they have made the hinder part of their Skulls to touch their Heels. *Trincavel* assures us, that he had seen several Examples of this Nature (a). As for what concerns the *Epilepsie*, the most of those Children who are afflicted with it, are no otherwise troubl'd with that Distemper, than as it proceeds from *VVorms*.

Another Effect of long and round *Worms* is sometimes to prick and pierce the *Bowels*, and to spread themselves all over the Cavity of the lower *Belly*, and to devour the Patients till they have consumed them, as it befel that *Herod Agrippa*, mentioned in the *Acts of the Apostles*. *Graffius* b) writes, that being call'd to see a young Man of 15 Years of Age, who was very sick, and understanding that he was troubled with *VVorms*, he made him take for three Mornings together, a certain Powder of his own Composition, which caused him to void downward above a hundred *Worms*. But after all, his *Belly* continuing hard and stretched toward the *Navel*, he laid an Emollient Plaister upon it, and in twenty four Hours after, several *Worms* of a good length began to come out from his *Navel*, and so continued com-

(a) *Lib. 9. c. 11. de rat. curand. part. Hum. Corp. Affect.*

(b) *Graft. apud. Gulielm. Fabric. Cent. 2. Obs. 13.*

ing forth for several Days. Nevertheless his Belly not falling for all this, he continued the same Cataplasme, and because it was Strawberry time, and for that the young man eat a great many, it happened sometimes, that in taking off the Cataplasme, you should find the Grains or Seeds of the Strawberry sticking to it. VVhich will not permit us to question, but that the Bowels, and the containing parts were pierced by the *Worms*. The Patient dyed within a few Days after:

Examples of the same Nature are to be found in several Authors; as in (a) *Hollerius*, *Nicholas the Florentine* (b), *Forestus* (c) and *Trincavel* (d). We must not forget to observe, that many times *Worms* are the Cause that Nurses have their *Milk* dried up; of which here are two Examples that I have seen, and which deserve to be related.

The fourth of *January*, 1699. a Nurse came to me for a Remedy, which would cause her *Milk* that was dried up, to come again; upon which I prescribed her one which had no Effect. She came to me again, and I advised her to another, which proved as ineffectual as the former. Wondring at this ill Success, I bethought my self of prescribing

(a) *Holler. l. 1. c. 54. de Morb. Intest.*

(b) *N. Florentin. Serm. 5. Tract. 8. c. 54.*

(c) *Forest. l. 7. Obs. 35. in Schol.*

(d) *Trinc. lib. 9. cap. 11. de rat. curand. part. hum. Corp. Affect.*

her

her a Remedy for the *Worms*, which she took the next Day, and three Hours after she voided 23 *Worms*, some of which were very near three Fingers long. Some Days after her *Milk* came again, and she had her Breasts full. You must understand by the Way, that this Nurse was fat, fresh coloured, and complain'd of no other illness, only that when she had been long without eating, she was taken with a Giddiness.

Another, about thirty years of Age, somewhat lean, a little pale, and of a lively Temper, came to me the 6th of *February*, 1699. telling me, that her *Milk* had failed her all of a sudden. I examined her *Breasts*, which I found very empty, so that 'twas impossible to draw a drop of *Milk* out of them: her Nipples were full of Chaps, as it sometimes happens to the Lips. Round about the Nipple appeared a Circle much paler than is usually seen about the Nipples of Nurses. I was not content with this Examination; I was desirous to see the Quality of her Urine, which at first appeared to me to be coloured well enough; but having let it stand a little, I found, that whereas it was transparent before, it became thick and whitish, like the Urines of several sick People. After this, I ask'd the Nurse, whether she did not feel some pain in her Belly; to which she answered, that she had nothing that troubled her, but certain Stoppings of her *Breath*, which seized her

her only in the Night, but never in the Day. I prescribed her a Remedy for the *Worms*, never telling her, that 'twas for that Distemper, but only bid her inform me what Effect it had. Eight Days after she came to me again, and told me, that ever since she took the Physick, which I gave her, she had voided *Worms* every Day, and that she thought her *Breasts* were grown big. I was then desirous to see whether I could observe the same things I had observed before : but I found the Chaps in her *Breasts* gone, the Circle about her Nipple was no longer so very pale, nor did her Urine change any more after it had settled for some time. Then not doubting but that her *Milk* would return again, as plentifully as it had used to do, if I still gave her Remedies for the *Worms*, this I did, and it had that Success, that 15 Days after she came to me again, with a lusty Child in her Arms, that suckt with full Content. I was willing to relate this Matter of Fact, with all the Circumstances, that such Physicians who read it, may make their Reflections upon it.

The Round-worms, called *Ascarides*, cause itching in the Fundament, and many times through the Irritation, which they cause in the Guts, Fainting-Fitts, Swoonings and oftentimes *Tenesmus's*.

The Effects of the *Worm* call'd *Solium*, are almost the same with those of the Long and Round-worms, but more violent, as *Arnold*
de

de Vallanova observes (a). And there are three most usually produced by this *Worm*; Swooning, Privation of Speech, and difficulty of recovery in Sickneses proceeding from any Cause whatever.

As for Hunger, it may be said, that if *Worms* are hungry sometimes, the *Solium* is that which is the most hungry of all; so that our Patient was still tormented with a devouring Hunger, and that from his Infancy, as I understood from himself: which comes to pass from hence, that this *Worm* consumes one part of the *Chyle*, and corrupts the other; for then the *Body* is deprived of its Nourishment.

As to the Difficulty of Recovery in Sicknes, 'tis the usual Effect of the *Solium*. For the Natural Heat being weakned in Sicknes, then it makes the least *Chyle*; and that little *Chyle* which ought to supply the Nourishment, is almost all devoured by this *Worm*; whence it follows, that a Man must fall into such an Abatement, and be so extreemly exhausted, that it is impossible for him perfectly to recover his Health; which happens to all those who fall sick, when they have this *Worm*. If he who falls sick be troubl'd with this Insect, says *Hippocrates*, it will be a difficult thing for him to recover (b) *vix revalescet*.

(a) The Sign of the *Solium* is, when they suffer the fore-said Symptoms more intensely and violently. *Arnold. Vil. lanov. Breviar. l. 2. c. 21.*

(b) *l. 4. de Morb.*

And the reason of this Difficulty (*so he goes on*) (*a*) is because this Worm consumes a part of the Nourishment contained in the Stomach. From thence proceed those frequent Languishments, that remain after certain Sickneses; and against which all Remedies prove ineffectual, by reason the Physicians never bethink themselves of the true Cause. From thence so many lingering Fevers, so many Indispositions, that we hardly know to what sort of Disease to refer them.

Hippocrates says, That this Worm never does much *b*) Mischief; nevertheless, *he says a little higher*, that they who are infested with it loose their Speech all of a sudden (*c*). I add to this, that our Patient laboured under an Epilepsie for several Years; but now those Fits have left him. I have seen several others, who had this Worm, afflicted with an Epilepsie; which makes me judge it to be more dangerous than *Hippocrates* says it is. But it is probable, that Author spoke in that manner, with reference to the great Mischief, which, as he says, this Worm never causes, that is to say, *Death*. *Mortem non inducit, sed consensescit*. In another place he calls this Insect by the Name of *Onchos*, which in the

(*a*) *Hip. l. 4. de morb.*

(*b*) He who has this little Animal, to him nothing dangerous happens.

(*c*) In some it intercepts their Speech.

Language of Physicians, signifies a *Beast* which is dangerous by reason of its Poison. They who are troubled with this *Solitary Worm*, endure Labour with Grief and Pain; the least Exercise wearies them, and their Bodies are always weak. *Hippocrates* seems to say the contrary, according to *Vanderlinden's* Translation, who thus renders the Greek Words. *He who is troubled with this little Animal, cannot become very weak in all that time that he has it.* But this Translation is not true; for the Greek imports, that no considerable Mischief happens to him that has this Worm: which is quite another thing.

The *Solium* in Women produces more pernicious Effects than in Men; for it causes violent Cholicks, long *Deliriums*, frequent Swoonings, together with Suppressions of their Terms, Swelling of the Belly, Loathings of their Meat and Fantastical Appetites, which might be easily taken for Signs of Breeding: sometimes they have been thereby deceived; and *Spigelius* relates an Example to this purpose worthy of Remark. A Lady of Quality had all the Iqueamish Loathings, all the vicious Appetites usual among Women with Child, together with a Belly very big, and a total Suppression of her Monthly Terms. Her Parents being amazed, caused her to be examined by Physicians and Midwives, who unanimously assured them, that she was with Child; for which reason they

they gave her no Physick. The young Lady thus deprived of Succor, fell into a total Dryness of her whole Body, and dyed within a little while after. She was opened, and instead of a Child, which they expected to find in her Womb, they found in her Bowels a Collection of Water, and a flat Worm, which took up the whole length of her Guts.

Here we are in the first place to observe, that it is no strange thing to see wormy Pleurifies, they are frequently seen, and several Authors make mention of them. (a) *Gabucinus*, among others, gives a Relation of one, the Cure of which has a great Affinity with this here. He recounts, that a Maid, having all the Symptoms common to People affected with the Pleurisie, a pricking Pain in the side, a dry Cough, a hard and returning Pulse, a short Breath and a continued Fever, he observed that the Body of the Maid was sometimes cold, sometimes hot, and when she was in her hot *Fit*, one of her Cheeks grew red, the other remaining pale; that upon this, he gave the Patient a Medicine against the Worms, which caused her to void a great number, and then the Pleurisie ceased.

This was what we saw happen to our Patient; he was cured of his Pleurisie presently

(a) *Gabucin. de Lumbric. c. 13.*

after he had voided a Worm. Observe now how this Recovery may be explained.

'Tis known, that the Pleurisie is a Disease which is fed by the Stagnation of a Humour that is stopp'd in the smooth Skin, which covers the Ribbs, call'd by the Name of *Pleura*. Now, I say, the continuance of the Humor was fed by that of the Worm, and you shall see how. Nothing is more capable to dissolve a settled Humor, than the abundance and Vivacity of the Animal Spirits. These Spirits are produced by means of the Distribution of good Blood, through the whole Body; this good Blood proceeds from a good *Chyle*; now this good *Chyle* is consumed by the Worm, which devours the most subtil and delicate part of it; as it is easie to judge by the Structure of its Neck, which is almost as thin as Paper, so that there remains behind in the Patient only a thick and gross *Chyle*, little proper for Distribution. This *Chyle* made a thick Blood, and this thick Blood produced gross Spirits, which were not subtile enough to dissolve the parts of the Blood settled in the *Pleura*, and to give them that Subtily which was requisite for them, to the end they might be reassum'd by the Vessels, and renew the Commerce of Circulation. Therefore when this Worm is voided, the good *Chyle*, instead of feeding the Worm, is employed toward the Nourishment of the Patient; a thinner Blood is made

of it, more lively and more abounding Animal Spirits; and consequently the Humor collected in the *Pleura* was penetrated by the subtile and insinuating parts, which rendered it proper to be reassumed by the Vessels, so that the Humour being dissipated, the Cure followed of Course.

I add to this, that it is an Error to believe, as some Physicians do, that Worms cannot cause a Pleurisie. They are often the Cause of it, as *Quercetan* observes; and the better to understand it, there needs no more than to consider what that corrupt Matter, which always accompanies Worms, is able to produce. For it is no difficult thing to conceive, that it may easily afflict the *Pleura* and inflame it, without having any recourse to other Causes. *Quercetan* reports, that having opened several old Men that died of Pleurifies, he found their Intestines full of great Worms, which he lookt upon to be the real Cause of their Disease (a).

I have said already, that Long and Round Worms twitch the Guts: we shall here observe that the *Solium* does not prick, because it has not a Head made any way proper for it; having that part very soft, as *Spigelius* (b) and *Sennertus* (c) observe, and as may be seen in that which I keep by me.

(a) *Quer. rediv. Tom. 3. de pleuritid.*

(b) *Spigel. de lumb. lat. c. 6.*

(c) *Vide etiam Sennert. l. 3, part 2. Sect. 1. c. 3.*

By all that we have hitherto said, it may be known that the Diseases caused by Worms are not Indifferent; which may be evinced by these two or three Examples following.

Observation.

Some few Years since being sent for to one M. Lorraine, in the Street de la Truanderie, to see a young Boy that was sick of a Tertian Ague, to whom for three Weeks together they had given the *Quinquina* or Jesuites Powder in vain, I told the Father and Mother, that their Child was sick of the Worms, that his Ague proceeding from such a Cause, the *Quinquina* would never cure him, and therefore that they must have recourse to other Remedies. To which purpose I prescribed him some, which they were going to prepare, at which time some body came into the Room, who averred that the Youth was not sick of the Worms, for that the *Quinquina* being bitter, would have killed them if he had any; which plausible reason, contradicted by Practice, enclined the Parents to continue the use of the *Quinquina*. Eight Days after the Ague grew more violent, and the Boy became light-headed, so that I was called again. I gave him a Glyster of Milk, which bringing away with the Excrements four great living Worms, convinced the Parents of their Error, which they found too late, for the Boy died within a few Hours after.

Ans.

Another Observation.

M. *Davi*, Doctor of the Faculty of Physick in *Paris*, told me, that having left for dead a certain sick Person, whom he had in Cure, he bethought himself however of going again the next day, at what time finding his Patient at the last Extremity, knowing no Body, without any or little Pulse, and without Heat, inspected by some Signs which he then perceived, that all this might be caused by Worms; so that without any delay, he caused his Patient to take several Things, which were good against the Worms, which expelled out of his Body a yellow Animal, that had two Horns before; but the Disease not abating for all that, he caused him to repeat the same Remedies, which expelled another Worm like the former; after which the sick Person came again to himself, and by degrees recovered his Health.

Another Observation.

M. *Hartsoeker* writ to me from *Amsterdam*, that one of his Children had been sick for some time, and past hopes of Cure; that he gave him some Grains of Emetick Tartar, which that Day, to outward appearance wrought no Effect; but the next Day the Child voided three great dead Worms, and was presently cur'd.

Another Observation.

About three Years ago, I was sent for to M. Laurell, the Advocate's House, in Old Temple-street, to see a young Man that was sick of a Dysentery, to whom they had given *Hypocacuana* four times. I presently found he had Worms, and told the Physician who had him in Cure what my Opinion was. But he by long Arguments drawn from the Nature of *Acids* and *Alkali's*, maintained that the said Dysentery could not proceed from Worms; and prevailed so far, that 'twas resolved in the House that the sick Person should be managed, according to the Principles of that Philosophy. But the success did not favour the Philosopher's Arguments; the Distemper grew more violent, and the sick Person was advised to change the Air: They removed him into the Country, where he grew worse and worse; they brought him back to Paris, where he died about 8 Days after. They opened him, and found his Guts full of Worms, especially the *Colon Gut*.

And here I cannot but observe, by the way, that *Acids* and *Alkali's* are put to too many uses, and that the Daily abuse of that Doctrine by the half-way Learned, is a thing to be lamented. 'Tis an Induction ill drawn from some Experiments of Chymistry, which they unite with *Decartes's* Philosophy: They

They borrow the *Corpusculums*, and the connexion of Matter from this Philosophy, to which they join the *Acids* and *Alcalis*, which Chymistry discovers to 'em, and believe that by this means they have found the Key and Secrets of all Physick. Have you a Fever, 'tis, say they, because the *Corpusculums* of the Blood are in motion, and for that the *Acids* coming to encounter the *Alcalis* produce a fermentation more or less violent, according to the Proportion of the one or the other. Have you lost the Appetite, 'tis because there is not *Acid* enough in the Stomach, and for that the little that is there, is dull'd and blunted by the great quantity of *Alcalis*. Is such a one of a dry Temperament, 'tis because he abounds with *Alcalis*. Is he plump and fat, 'tis because the *Acids* are predominant. Do Crabbs Eyes cool ye; Presently the *Alkalis* of the Crab make blunt the Point of the *Acids*. Does Wine heat ye; The *Acids* of the Wine increase the *Acids* of the Blood, and give it too violent a Motion. Why do the Leaves fall from the Trees in *Autumn*? The *Alkalis* have blunted the *Acids*, and hinder that Motion which is requisite for Life. Is there great plenty of Fruit; 'Tis because the Earth, which nourishes 'em, abounds in *Acids*. Is there a scarcity of Fruits; 'Tis because there are too many *Alcalis*. Nay should you ask these People, why the *Seine* bears huge flakes of Ice in

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in Winter and sometimes breaks the Bridges, they will tell ye it proceeds from *Acids* and *Alkalis*. For that the Water is fix'd by the *Acids* of the Air, which fix the *Alkali's*; and the parts of Stone or Wood, which are broken by Ice, would ne'er have been broken, if the *Acids* which insinuated themselves into their Pores had not render'd 'em brittle. In like manner, why does Fire consume a House? 'Tis because the *Acids* and *Alkali's* are in motion. By and bye you shall hear 'em make *Acids* and *Alkali's* the cause of Houses being pull'd down, when they were demolished by Carpenters and Bricklayers. I will not deny, but that there are such things as these Salts, but I cannot suffer 'em to be thus made use of and coupled together without discretion, and that Men should rather hazard the Life of a sick Person, than relinquish a Doctrine they are fond of.

If it be the business in hand to examine whether a Sickneſs be caus'd by Worms, there are ſigns by which it may be eaſily known: But inſtead of ſtopping there they ramble in ſearch of *Acids* and *Alkalis*, and by this Doctrine they ſwagger it out that ſuch a one that is ſick has no Worms, yet the ſame Man within a ſhort while after dies of the Worms. A thing which neither good Senſe nor Conſcience indeed can excuſe. The Doctrine of *Acids* and *Alkali's* is uſeleſs in Phyſick without an exact knowledge of what

what passes in Humane Bodies. This is the true Knowledge which a Physician ought to labour for, without which all the Systemes of *Acids* and *Alkali's*, as well as all other Disputes, signifie nothing, as M. *Jacquemier* observ'd very much to the purpose, in a Thesis, which he maintained in the Physick Schools of *Paris*, *Novemb. 13. 1698 (a)*. VVould I have submitted to all the Arguments, that were made upon these Salts, to perswade me that the Person whom I freed from a *Solium* here describ'd, had no Worm, but that he was to be let Blood, and afterwards to take VVhey, he had had his Worm still, or else had been in his Grave. According to their Doctrine the Purgative Potion would have committed strange Disorders, being given before the Concoction of the Humors, and before the *Acids* and the *Alkali's* had finish'd their Combat. The Patient would dye if I did not let him Blood. The worst was to be fear'd without Blood-letting and VVhey. Nevertheless, I prescrib'd neither one nor the other; my Patient took the Potion which I prescrib'd him, voided a Worm four Ells and three Inches long, and was cur'd: That was all the mischief that happen'd.

(a) Hac omissa in vanum Arcana Natura penetralia subit Medicus; perperam Acidorum Alkaliumve nomina Effutiet.

But

But People do not examine with care enough whether the Patients have Worms or no; from whence it comes to pass, that several Persons of all Ages, for want of taking proper Remedies or Preservatives against Worms, languish away and dye, without knowing the real cause. The Insects are engrendred by degrees in the Body, and afterwards are settled there in a such a manner, when People neglect the Remedies which are prepared to drive em thence, that many times, when they would themselves, 'tis too late to oppose 'em. Sometimes, very long ones have been found in the very Trunk of the *Vena-Porta*. In 1601, *Spigelius* dissecting a Publick Anatomy, and dressing the Liver of the Party, which had been a Woman of a middle Age, and one that dy'd extreamly lean, found four great round Worms, (a) about a handful long, in the Trunk or hollow of the *Vena Porta*, where they had caus'd an Obstruction which was the Death of the Patient. He shew'd these Worms to *Fabricius Aquapendente*, his Master; who the next day shew'd 'em to all that were present, as a wonderful thing.

(a) *Spi. de lumb. lat. nota quarta.*

Several Authors will have these Worms to be the Causes of Malignant Fevers. *Kircher* (a) and *Hauptman* assert; that they never proceed from any other Cause (b). And *Foreſtus* recites a great Number of wormy Malignant and Peſtilential Fevers, of which he had been an Eye-witneſs (c).

I ſhall not here examine, whether Malignant Fevers breed Worms, or whether Worms cauſe Malignant Fevers. I ſhall only ſay to this, that in the laſt, which were riſe, I found it the moſt prevalent Means to cure my Patients, to give them ſuch Phyſick as related withal to the Cure of Worms, and then perfected their Cures by the help of ſome Cordials. We may obſerve, by the way, that the Wines of that ſeaſon were very green, and conſequently very eaſily corrupted; which might contribute extreamly to the breeding of Worms, where with all the ſick People were for the moſt part infeſted. I ſhall add one thing more which *M. Quiqueboeuf*, Doctor and Profeſſor of the Faculty of Phyſick in *Paris*, obſerved that Year; which was, that there were Worms in the Wine it ſelf; which he thus came to know. One of his Servants

(a) *Kirch. in ſcrutinio. peſtis.*

(b) *Haupt. de viva mortis imagine, & tract. de Therm. Wolkenſteinensibus.*

(c) *Foreſt. de inteſtin. affect. lib. 21. Obſerv. 26. in Schol.*

going into the Cellar to take the Fofset out of a Veffel, that he might fix a little Cork in the room of it, perceived a kind of Lees mingled with Worms, sticking about the Fofset; which giving an Occafion to Monf. *Quiqueboenf* to examine, Whether there might be any Worms in the Lees, he ordered the Wine to be drawn out, and fet the Lees in the Sun. In an Hour's time there appeared fwarms of Worms; and he found the fame Accident in two or three Pieces of Wine.

All thefe Obfervations, which we have hitherto recited, fhew how eafie and common a thing it is for Worms to breed in the Body of Man, and confequently how much it behoves the Phyficians carefully to watch the Signs by which they may know when their Patients are infefed with them. Let us now fpeak of the Signs themfelves in the next Chapter.

CHAP. V.

Of the Signs of Worms.

THE Signs by which we may know that there are Worms in the Body, are for the most part the Effects which the Worms produce; but in regard those Effects are different from others, we have discoursed of, and for that at the same time, these serve as a mark to discover the said VVorms; therefore we put them here in Number of Signs.

These Signs are Common or Particular: the Common ones agree with the *Genus*; the Particulars with the *Species*. That is to say when these Common Signs meet; it may be said in general, there are VVorms, without knowing precisely what sort of VVorm it is: And when we find Particular Signs, we may say, not only that there are VVorms, but that those VVorms are of such a sort. VVe shall discourse in the first Place of the Signs of *Worms* which are ingender'd out of the Intestines, and then in another Article, of the Signs of those which are engendered in the Intestines themselves.

ARTICLE

ARTICLE I.

Of the Signs of Worms engendred out of the Intestines.

The Signs of *Worms* engendred out of the *Guts*, are for the most part Particular, because the Difference of those *Worms* is taken mostly from the place where they breed; and the Signs which make 'em known always shew the Place where they lye.

The *Symptoms* by which you may know there are *Worms* in the Head, are violent Headaches, and shooting in that Part. These pains frequently derive themselves from other causes than *Worms*; but when they are extremely obstinate, and will yield to no other Remedies, it may then be judgd that they are caus'd by some *Worm*. I say, it may be so, by reason this *Symptom* is not always certain. And I remember that at *Lions* some Years ago, an Infant about four years Old, the Son of a rich Merchant, whose name was M. Bon, being dead of a Disease, which a strange Pain in the Head had made his Parents believe proceeded from some *Worm*, the Head of the Child was open'd; and instead of any *Worm*, there was only found in it a Collection of Water.

What I spake of *Worms* in the Head, I say of *Worms* in the Liver, Kidneys and other

other parts; which cannot be suspected, but by the obstinate Pain in the same part. An enduring pain in the Kidnies, accompanied with a sense of corrosion and pricking, is sometimes a *Symptome* of Worms in that Part, and a Patient of the famous *James d'Alechamp*, to whom he gave Physick at *Lyons* one day for a Pain of the same Nature, when no Remedy could give him ease, voided at length a little Worm through his Urethra, which had a Head pointed with Horns, and his Body covered with a Shell like a Tortoise. *James d'Alechamp* caused this Worm to be dry'd, to preserve it, and shewed it out of Curiosity to all the Learned Men, and among others to (a) *Vidus Vidius* the younger, who made a Description of it; as of a thing which he had seen.

There are none but the Sanguine and Spermatick Worms, which cause no pain, and which by consequence are more difficultly gueſt at, the first swimming in the Vessels, as we have said; and the Spermaticks, being only to be found in Persons who are in health, and whose Parts designed for Generation are the most Sound.

(a) *Vidus Vidius Junior*, l. 10 c. 14. de curat. memoratim.

As for the Cutaneous Worms, such as the *Crinones*, the Ox-worms, &c. the Signs of them are to be known by the Effects, which we have set down in the third Chapter. I shall only add this here, that the *Crinones* shew themselves by sensible Marks; when the Body of the Infant is put into Luke-warm Water. For then they thrust forth their Heads through the Skin, and may be easily discerned. We shall speak of the Remedies proper for all these sorts of Worms in the ninth Chapter. Let us come now to the Symptoms of Worms bred in the Intestines.

ARTICLE II.

Of the Symptoms of Worms bred in the Intestines.

We shall begin with the Common Signs, and then come to the Particular Symptoms according to the Distinction we have already laid down. The Common Symptoms of these Worms are fiery and sparkling Eyes, livid Cheeks, cold Sweats in the Night time, abundance of Spittle which drivels from the Mouth when asleep, a great drowth in the Day time; a dryness of the Tongue and Lips, which goes off in the Night; a
stinking

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Stinking Breath, enclining to sowerish, a blewish Countenance, as if seen through the flame of Brimstone, grating of the Teeth in the Night, a continual Looseness, whitish Excrements, frothy Urine, sometimes white, sometimes obscure, but for the most part thick and muddy.

Among the Effects we have recited in the preceding Chapter, there are some which may serve for Signs by reason of the Circumstances which attend them. For Example, we have said, that the Effects of Worms were frequent Vomiting and Epilepsies. But to know when these Accidents proceed from Worms, there needs no more than to examine, whether these Vomiting throw up nothing but what has been eaten, and whether those Epilepsies are without foaming at the Mouth. For when that happens, 'tis a Sign of Worms. They who have Worms sometimes rise in the Night in their Sleep, cry out and move their Lips, as if they were eating; which effect may serve for a Sign, if well considered. There are Children who have no Worms, yet have these Symptoms; and others in whom Worms are the only cause of these Symptoms. The way to distinguish it, is to see whether the sick Persons find themselves eased by Abstinence. For they, in whom what we have said proceeds from Worms;

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cannot fast without finding themselves tormented, not by hunger, for many times they have no Appetite, but by Twitchings and Tearings caused by the various Motions of the Worms in search of Food. I have put a Dry-Cough in the Number of the Effects of VVorms; but when it perseveres, that Effect becomes a certain Sign. And by this it was that *Forestus* (a) one Day knew that a little Girl about nine years of Age that had been six Months sick of a Quartan Ague, was troubled with VVorms; which made him prescribe her Physick proper for that Distemper. He gave her half a Dram of Aloes mixt with some Grains of red Coral, by which means he delivered her from five VVorms which she voided, and then her Ague left her. VVe may observe here by the way, that in a Quotidian Ague, this remedy would not be convenient, because it heats too much. Nor would I give it at the beginning of a Quartan.

As to a stinking Breath, which I have set down among the Signs, 'tis a Sign so certain, provided you can distinguish it (for every stinking Breath is not a Sign of VVorms)

(a) *De Symptom. Feb. l. 7. Obs. 36.*

that *Brassavolus* (a) visiting an old Man of fourscore Years of Age, who lay a dying, knew by his Breath that he was troubled with VVorms; which obliged him to give him something against the VVorms, by means of which he made him void five hundred Worms and cured him. The Old Man, says *Brassavolus*, was reduced to such Extremity, that Count *Alfonso Trotti*, Kinsman to his Patient, and Chief Master of the Household, to the D. of *Ferrara*, had given all requisite Orders for his Burial.

As to raging Hunger, which many times proceeds from VVorms, it frequently becomes a Sign, when it is accompanied with certain Circumstances; as with extraordinary Leanness, though the party feed well. A Boy about twelve years of Age, the Son of a Founder, says *Forestus* (b) had kept his Bed for several Months, quite dry'd up to nothing, without feeling any other Illness than a slight pain in his Belly near his Navel. For otherwise the Child had performed all his natural Functions very well, which made the Father neglect consulting any Body. But the Boy became so dried up at the end of some Days, that *Forestus* was call'd. At first

(a) *Brassav. Comment ad Aphor. 26. l. 3. Hip.*

(b) *Forest. de intestin. affect. l. 21. Obs. 29.*

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he admired the Kind of the Distemper he had to cure, the hidden Cause of which he could not imagine ; for that the Child eat very well, though to no purpose ; his Urine was of a good Body and of a good Colour, though somewhat crude and waterish. But the Pain in his *Belly*, together with his extraordinary Hunger, caused *Foreſtus* to ſuſpect him to be troubled with Worms. Therefore for ſeveral Days one after another, two Hours before he eat, and at four in the Afternoon, he ordered the Boy to take a Glaſs full of a Decoction of Hyſſop, Marjoram, Fennel, Fumitory dried, for it was in *January*, Centaury the Leſſer and VVormwood boiled together in a Pint of VVater, then ſtrained through a Linnen Cloth, and mixed with an Ounce of Simple Oxy-mell, as much Syrrup of Fumitory, and as much Honey of Roſes. This Medicine, every time he took it, cauſed the Child to void a great Number of *Worms* by Stool, and perfectly cured him.

The Time of the Year and Difference of Countries, upon ſeveral Occaſions may alſo ſerve for Signs to aſſiſt us how to find it out that there are *Worms* in the Body. In Autumn, for Example, People are more Subject to *Worms*, than in other Seaſons : So that if in that Seaſon, we find that any
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Person has some Signs of *Worms*, we ought to look upon these Signs as less doubtful, than at another time. The Difference of *Countries* is also to be observed; for Example, *Italy*, *Germany*, *France* and *Spain* are very Subject to *Worms*. Age, Temperature, and manner of Living are also great Signs. Children, for Example, Persons of a *Flegmatic Temper*, such as eat much, they who presently after Meals use violent Exercise, they who sleep too much, they who live in too much *Bodily Ease*; all these Persons are more subject to **W O R M S** than others.

As to particular Signs they differ according to the Species of Worms. The Signs of long and round Worms are Tensions of the Belly, accompany'd with Noise and Pain, Itching of of the Nose, which obliges the Party to rub it continually; Corrosion of the Guts, Hiccoughs, a palpitating Sleep, waking with sudden Startings, without any outward occasion; the same Wakings accompany'd with Shrieks, and follow'd with a quick return of Sleep; an unequal Pulse, intermitting Fevers, of which the Party will have sometimes three or four Fits without any certain Order; hollow Eyes, and sometimes red; Cheeks sometimes glowing red and sometimes of a leaden Colour. In some their Eyes are of the colour of Blood, a

Pulse unequal and recurrent: Others talk idly in their Sleep. Sometimes they who have round Worms want a Stomach, and vomit after Eating: they have Fevers accompany'd with Cold in the extream parts of the Body. These Signs never meet all together, but sometimes one and sometimes the other. I said in the preceding Chapter, that many times Worms occasion the drying up of Nurses Milk, and cited two Examples, the Circumstances of which may serve to shew when that Accident proceeds from Worms.

The Signs of the Worms call'd *Ascarides*, are a continual Itching in the Fundament, which sometimes causes fainting Fits and Swoonings: Which Itching proceeds from the Motion of these Worms, which they never do but in Swarms, and the quick sence of the part where they lye, for we must not believe with *Mercurialis* and some others, that the Great Guts have only a dull sort of Feeling, seeing that the Torments of the Colick, which are felt in the *Colon*, and Pains in the *Intestinum Rectum*, caus'd by the Wind enclos'd therein, are a good proof to the contrary.

The Signs of the *Tenia* are Lassitude and Faintness after Meat, tho' the Party have neither walk'd nor stirr'd much about to weary himself, frequent Numbnesses and Dulness in the

the Day-time, which cause a Heaviness above the Navel.

The Signs of the *Solium* are certain little Bits, like Melon or Cucumber-seeds, which are found in the Excrements. *Hippocrates* speaks of this Sign as of a certain Symptom of this Worm (a). *Aristotle* (b) does the same, and says 'tis the Sign by which Physicians know when that Worm is in the Body.

I add, that Experience confirms what *Hippocrates* and *Aristotle* have written upon it; and that it was chiefly by this Sign that I knew our Patient had the Worm from which I deliver'd him.

There are other Signs of the *Solium*, as shifting Pains in the Liver, which are felt fasting from time to time, and which are sometimes accompany'd with great Fluxes of Spittle from the Mouth, and a Privation of Speech which lasts but a little time. Pains in the Stomach which succeed those of the Liver, renew by Intervals, and are sometimes attended by a pain in the Back, which continues a long time. These are the Signs of the *Solium*, all which

(a) *Hipp. l. 4. de Morb. Art. 37.*

(b) *Arist. Hist. Anima, l. 5. c. 19.*

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our Patient had, not one excepted, and which are expressly set down by *Hippocrates* in his fourth Book of Diseases. That Author affirms, that the Pain, which they who are infested with the *Solium* have in their Liver, proceeds from this, that this Worm goes into that Bowel: which appears probable enough, if we consider the Fineness of the Neck of that Animal, and the Smallness of the Head, and the Situation of the Passage that conveys into the Guts the cholic Humour of the Liver. For it is easie to apprehend, that when the party is fasting, the Worm finding no more *Chyle* in the Stomach, may withdraw his Head from that part to seek for Nourishment elsewhere, and that thence retiring into the *Duodenum*, which is next the *Pylorus*, and where it finds the Overture of the Conduit that comes from the Liver, it may also creep into that Overture, and from thence go to the Liver, not being to be hinder'd by the *Valvula*, which *Higmore* and *Marchette* say belongs to the Gall - passage within the *Duodenum*; for that in case there be any such *Valvula* there, this Worm has a Head small enough and a Neck slender enough, to creep under the *Valvula*. There is but one Objection against it, that one would think the Gall of the Liver should hinder the Worm from going near that Bowel: but the impatient Hunger of that Worm, not meeting with any Nourishment, will furnish us easily with

with an Answer to that Objection. Nor is that which I alledge without Experience; for in 1572. the Son of the famous *Wierus*, dissecting the Body of a Maid, who died of a Dropsie, found therein two Worms, about a Handful in length, one of which possess'd the whole Passage, which runs from the Gall-bladder into the *Duodenum*, and the other the whole gibbous part of the Liver (a), whither, without question, those Worms were got for want of Nourishment, as *Wierus* observes.

I have observ'd a little above, that Countries were frequently a Sign by which we might guess in general whether Worms were in the Body or no. I add in this place, that they are frequently particular Signs for denoting the Species of Worms! for if certain Countries are more subject to Worms than others, there are also some that are more subject to such and such Worms. As some to the *Ascarides*, others to the long and round Worms, others to the flat Worms (a). And if from Worms of the Guts we pass to others which are bred in other parts of the Body, we shall find, there are Nations subject to par-

(a) *J. Wierus de praestig. demon* l. 4. c. 16.

(a) They are common in Holland. See *M. Hartsoecker's Letter* at the end of this Treatise.

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particular *Worms*, that are not seen elsewhere. As for that part of *America*, which is in the *West-Indies*, where there are a People subject to those *Worms* call'd *Toms*, of which we have spok'n in the third Chapter: and for *Africa*, where the Negro's are subject to *Worms*, which usually breed in their Thighs and Legs, some of which are an Ell long, some two and some three: we have spoken of 'em in the same Chapter.

To return to the *Solium*, I know no other Signs by which it may be discover'd than those already mention'd. This *Worm*, being bred with us in the Mother's VVomb, it is impossible to preserve us from it: but we may sometimes preserve our selves from others, because they are not always engender'd within us before our Birth. VVe shall now shew the Means.

C H A P.

C H A P. VI.

*Of the Means to be preserv'd from
Worms.*

WE cannot be preserv'd from *Worms* after Death; and he that dyes in the midst of Plenty, full of Strength and Riches, whose Body is replenish'd with the best Juice *, and whose Bones are as it were penetrated with the Marrow that nourishes them, shall be devour'd by these Insects in the Tomb, as well as the most unfortunate and poorest. All that Man can pretend to, is to preserve himself during Life; for which we are now going about to prescribe the Means.

Three Things make us subject to *Worms*, bad Air, bad Diet, and the ill Use of good Things: That is to say, a Man that will preserve himself from *Worms*, must breathe in a wholesom Air, avoid certain sorts of Nourishment, and make a moderate use of those which he has chosen.

* This Man dyes strong, rich and happy, his Bowels are full of Fat, and his Bones are watered with Marrow; another dyes in the bitterness of his Soul, without any Riches, and yet they sleep together in the Dust and the Worms cover them, Job 21. 24.

Of the Means

The Quality requir'd in the Air, in reference to what we here propose, is to be pure and thin. An Air of that sort is less fill'd with the Seeds of *Worms*, it awakens the natural Heat, favours the Course of the Blood, hinders the Humours from being corrupted by Rest, and takes from the wormy Seeds which are in the Body, that Virtue which breeds the *Worms* which they enclose. On the other side, a thick and impure Air, besides that it is full charg'd with the Seeds of *Worms*, corrupts the Humour by rendring them stagnant, by reason of its Thickness, and adulterating them by its Impurity, and so prepares for the Seeds of the *Worms* which it introduces or finds already in the Body, all the Matter requisite for their Breeding and Nourishment.

The Nourishment that a Man ought to avoid, who desires to preserve himself from *Worms*, is all Food made of Milk, except Butter, Things sugar'd, Vinegar-sawces, Cyder, Kernels of Pine-apples, Melons, Champignons, &c. I say, Vinegar-sawces, for nothing more enlivens *Worms* than Vinegar, as we find by Experience: Besides, that this Liquor being of it self full of those Animals, cannot but carry along with it a great Number of *Worms*, and the Seeds of *Worms*. That it is full of *Worms*, is a Matter of Fact, of which all People may be convinc'd by their Eyes by the help of a Microscope. The first thing to be discovered by a Microscope, is, that there

there are in Vinegar a very great Number of Worms made like Eels, of which some are alive and some dead; that they swim backward and forward like Fish, and that others lye at the bottom, and form a kind of Slime that produces other Worms. The second thing is, that the stronger the Vinegar is, the more Worms you shall observe in it. The third is, that when Vinegar is in the Tun, there are more living Worms in it, and that when it is in Bottles, there are more dead Worms. The fourth thing, that when you filter Vinegar through a fine Strainer, you shall not see a Worm for three Days, but then others breed. The fifth thing is, that if you put half a Glass-full of good Wine into a Pint of Vinegar, all the Worms in that Vinegar presently dye, but they breed again three or four Days after. The sixth is, that a Dram of *Venice* Treacle mixt with two Pints of Vinegar, kills all Worms. The seventh is, that if after you have mix'd the *Venice* Treacle with the Vinegar, you let that Mixture stand a Month in the Sun in a Vessel well stoppt, taking care to shake the Vessel every foot, and, at the end of the Month, you filter the Liquor, you shall have a Vinegar free from Worms for ever, and an excellent Antidote against the Pestilence and malignant Fevers. The eighth thing is, that you shall observe more Worms in Vinegar of Roses, than in any other: Which are all certain Experiments that every Body may

Of the Means

may try, and draw from thence many Consequences profitable for the Health.

Not only Vinegar is to be avoided by him who would preserve himself from *Worms*, but all sharp and sour Things, except Citrons, Pomegranates, and some others of that Nature. We have a great Number of Precedents of Persons whom the use of sour things have render'd subject to *Worms*; and *Spigelius* recounts, that being call'd to see a German Lady (a), which we mention'd in one of the foregoing Pages, who had voided a piece of a flat *Worm* that made so many Motions, and having examin'd her in what Condition she found her self before, and what Course of Diet she most observ'd, gather'd from her, that when she was a Maid she was very subject to round *Worms*, for that then she fed much upon curdled Milk, lov'd sour Milk entirely, and all sour things.

The most part of sour things engender *Worms*, and, if you observe it well, you shall find that all Children that have *Worms*, have a sour Breath. Which ought not to seem strange; if we consider, that *Worms* breeding in corrupt Matter, must of necessity breed in Matter that is sour, since there is nothing that corrupts but grows sour first.

(a) *Spig. de lumb. lat. c. 15.*

As for Pine-apple Kernels, with which they season the most part of their Victuals in several Provinces, they fatten, breed good Nourishment, and are proper in Consumptions, the Strangury, and stoppage of Urine, yet they are more proper to breed a certain sort of Worms, as we find by Experience, and for which I could bring several Examples. *Panarolus* relates one which deserves to be remark'd: In the Year 1652, at Rome, in the Month of March, a Capuchin Nun, who had been subject to Swoonings and several other Distempers, voided at her Mouth a living Worm, which had two Horns like a Snail, and six Feet; it was round and long, yet not exceeding two Fingers in length. *Panarolus* was desirous to see what was offensive to the said Worm, and made several Tryals to that purpose, which deserve to be repeated. First of all he sought how he could keep it alive; he bethought himself of giving it Pine-apple Kernels, which succeeded so well, that by that means he kept it alive thirteen Days. During that time he had recourse to several Remedies to destroy it. He began with Venice Treacle only, and afterwards mixt it in Wine, then with Vinegar: then he made use of Onions, Garlick, Treacle-water, Spirit of

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Vitriol

Of the Means

Vitriol mix'd with Water of *Carduus Benedictus*, Mercury, Salt; but all these Remedies nothing avail'd, the Worm still eat the Pine-Apple. Twelve Days thus were elaps'd: but the thirteenth a Lady of Quality desir'd *Panarolus* (a) to try an Oyl that she had; which, as she said, was extremely good against Worms. *Panarolus* made the Experiment the same Day, and the very smell of the Oyl kill'd the Worm. It was an Oyl that smelt of Treacle, and which easily evaporated; which made *Panarolus* judge it might be some Extract of Treacle well prepar'd. However it were, the Oyl kill'd the Worm, and the Pine-apples kept it alive, against all other Remedies.

As for Melons, they do but too well confirm what *Cardan* says, that 'tis a Fruit which produces Corruption, and which encloses altogether all the ill Qualities that are to be found in other Fruits; hurtful to the Stomach, to the Liver, to the Spleen, to the Guts, to the Lungs, the Kidneys and the Bladder; fills the Body full of Venome, causes pestilential Fevers; never agrees well with any Drink; which

(a) *Panarol. Jarrolog. Pentecost. 4. Observ. 20.*

eaten with Wine, engenders pernicious Humours; produces Inflammations of the Blood call'd Phlegmons, and several other Diseases: eaten with Water, causes Lienteria's and other dangerous Fluxes of the Belly. I could wish, for the Publick Good, says *Panarolus*, that the Magistrates would forbid the bringing those Fruits to the Markets. For what greater Pest is to be avoided, than that of these sorts of Fruits, which every Year kill several Thousands of Men? Therefore what that Physician wish'd for, is at this Day practis'd at *Paris*, where the wise Magistrate, by whose Orders the Policy of that City is so well kept up, takes care every Year to forbid the bringing of Melons to Market, after *September* is past, which is the Season that they are most dangerous.

I cannot here forbear to give an Account of what I saw besel a young Man within this little while. This young Man lov'd Melons to that degree, that he made them his constant Food: but he was every Year molested with Agues which that bad Nourishment were the cause of. The twelfth of *September*, 1698. being attack'd by an intermitting uncertain Ague, he neglected his Distemper, but still kept on eating his Melons for eight Days together: The ninth

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his Ague got a considerable head, and was attended the next Day with a Vomiting, with which he voided three great Worms, and a great number of others that were very small: two Hours after he was torn with Convulsions, and dy'd after so sad a manner, that it would be unpleasing to the Ear to relate the Circumstances.

As for Champignons, 'tis a general Rule, that they are hard of digestion: Now what ever is difficult to be concocted, unless it be by reason of its hardness, as Cherry-stones and Grape-stones, produce much Corruption, and consequently ought to be avoided by those that are subject to Worms.

Champignons cause a gross and thick Blood, make Obstructions, stay long in the Stomach, and, by reason of their ill Juice, with which the Stomach is already tir'd, hinder the digestion of the other Aliments. Sometimes they remain several Days in the Stomach undigested, and then they may produce dangerous Distempers. Of which I saw a sad Example about four Years since in the Person of an Auditor of the King's Accompts, whose Name was M. Bonnet de Cuvieres, who dy'd suddainly, returning from St. Laurence Fair, toward the end of September. He went in his Coach

Coach about Nine a Clock at Night from the Street *Briboucher*, to return to the *Fauxbourg St. Germain*, where he liv'd. As he came into the Entrance of the Street, he was seiz'd with a profound Senslessness, which made his two Friends that were with him believe, that he was fallen into a Sleep: but soon after finding their Friend to be very ill, they made the Coach stop at the end of the Street, before a Surgeon's Door, whose Name was *M. Dupari*. They took the sick Person in, who had now no Strength, and was past his Knowledge, and remov'd him into the Surgeon's House, who presently gave him an Emetic; which did no good, because his Throat was so clos'd, that it could not pass. In the mean time I was sent for; I presently caus'd him to be let Blood, which came forth very thick, and clotted in the Sawcers as soon as it fell. When the Bleeding was over, the Patient stirr'd a little, and I perceiv'd that he made some effort to throw off something from the bottom of his Stomach; presently I took a Napkin, and, holding it to his Mouth, I receiv'd the quarter part of a Mushrome. Immediately I asked whether he had eaten any Champignons that Day, and his Friends who had been with him for several Days, told me that he had not touched a Ragou for three

K 3

Days

Of the Means

Days together, and that for other things he had not been at all intemperate: His Lacqueys also, upon examination, told me the same thing. At length, after many Consultations, Mr. *de Fresquieres*, his Physician, was sent for, who ordered him to be again let Blood. But all Assistance proved in vain, his Knowledge never returned, and he dy'd about half an Hour after Ten a Clock in the Surgeon's House.

'Tis no hard thing to judge that Champignons were the cause of this Accident, the sick Person brought up a quarter of one, which had been in his Stomach unconcocted for three Days together. I do not hence conclude, that all Persons who eat Champignons have reason to fear the same sad Fate. But by this Example we may know how hard of digestion this sort of Nourishment is, and by consequence how apt it is to corrupt, and by that Means to produce Worms.

It is not always in our power to preserve our selves from Worms; those Animals often breed within us in an Age that is incapable to distinguish what is good or what is bad. 'Tis for Mothers and Nurses to have that care of their Children, and to be careful of giving them any thing that
may

may breed Corruption within them. That which causes the generality of Children to be troubl'd with Worms is the giving them Milk which is too old, so soon as they are born, and feeding them too often with boiled Milk. The first Milk which Children ought to suck, is that which is in the Breasts of Women that have newly lain in: for that is a purgative Milk which frees the Infant from all sorts of superfluous Humours, and which never overcharging the Stomach, never causes those Crudities which old Milk and more nourishing never fails to produce. We have recourse, says *Spigelius* (a), to Medicaments to purge new-born Infants, whereas they neglect the best of all Medicines, which is the Milk that Nature prepares in the Breasts of Women that have newly lain in. • That Milk is a Medicamentall Nourishment proportionable to the Weakness of the Infant, and which, becoming every Day less purgative, is never true Nourishment till the Stomach has strength to digest it, from whence it comes to pass, that the Ventricle is not overcharg'd, and that it is free from those Crudities, which fall into the Intestines and breed Worms therein.

(a) *Spig. de formato fœtu, parte secund. c. 3.*

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As for boil'd Milk, 'tis too gross a Nourishment given to Infants before the second or third Month; more especially when the Flour with which they thicken it, is not baked in the Oven; for then the boiled Milk becomes more heavy and hard to be digested; which renders it more apt for the Generation of Worms. The Flour which is designed for the thickning of Childrens Milk ought to be put into the Oven in an earthen Pan, after the Bread is drawn, and then to be stirr'd from time to time that it may boil all alike. Though boiled Milk, thickned with this Flour be very light, 'tis not good to give it to Infants above once or twice a Day, and moreover the Nurse must be careful to suckle it a little after, to the end the boiled Milk may be tempered with the Nurse's Milk, and so be more easily digested. For 'tis not sufficient to take good Nourishment, to preserve a Man's self from Worms, but he must observe certain Rules in the use which he makes of it. This use consists in three things: The first is to eat at a Time which is favourable to Digestion. Secondly, to observe such an Order in the Victuals as may not hinder the Concoction of it; for all depends upon good Digestion. Crudities being generally the cause of all that Corruption which renders our Bodies subject to Worms: And
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the third is, not to eat too much or drink too much at a Meal: which would hinder Digestion more than all the other Excesses which Man could commit. To which I may add, as a fourth Precaution, not to eat too much of one sort of Victuals.

As for the Time, there are three Things to be considered: The first is an Appetite; I mean a sound Appetite, not a sick one; a Appetite which proceeds from Necessity of Nature, which causes the Victuals to taste favourily, that they are more close retain'd in the Stomach, and that they are digested more perfectly. Which caused *Hippocrates* to say (a), that when the Appetite invites us to a thing, we ought to prefer that before another, tho' it were not so well qualified, because indeed it is the Appetite which causes it to be the better digested.

The second is the Concoction of the Nourishment of the last Meal; because a Man ought never to eat again, till he has reason to believe that his first Victuals are digested; otherwise the Concoction is disturbed, which causes Crudities, and the whole Body is filled with corrupt Humours

(a) *Aph.* 38. sect. 2.

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apt to breed Worms. And thus we see by Experience that they who eat at all Hours, without observing any time, are more subject to Worms than others.

The third is to have a Stomach disingaged before you eat again ; for if it be full of corrupt Humours, the *Victuals*, instead of being concocted will contract the *Vices* of those Humours ; which caused *Hippocrates* to say, That the more an impure *Body* was nourished, the more it was endamaged. The Means to expel that Corruption, or prevent it, is to take a little *Cassia* before Meals, or something else equivalent, to empty the Stomach.

As to what concerns the Order of *Vi-
ctuals*, you must begin with that which is easiest of Digestion, because that they not being detained by Others of a slower Concoction, go out of the Stomach so soon as they are digested ; nor do they corrupt, as they would do if they should remain after Concoction finished, so that soft things ought to be taken before hard things ; those of a hot Quality, before those of a cold ; taking always a Care not to use your self to too much Variety of *Vi-
ctuals*, that Diversity of Dishes, which causes the Pleasure

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sure of Repasts, producing nothing but Corruption and Worms.

I shall add here, That it is good to rest a while after Meals, for too quick Exercise, after a Man has eaten, causes Crudities, and by consequence much Corruption.

All Digestion is not performed in the Stomach; it is perfected also in the small Guts, and that by means of the Choler which is convey'd thither through the Gall-Passage: So that the Liver, or the Pipe is not obstructed, this Choler flowing into the *Duodenum*, and from thence into the rest of the Guts, perfects the work of Digestion, and by that means prevents the breeding of any Corruption. Whence it follows, that this is a good Precaution for a Man to preserve himself from Worms, to take such things for time to come as may prevent or correct Obstructions of the Liver.

The Question may perhaps be put, How it may be ordered so, that some things may be better for the Liver than for other things, and whether they have any Understanding to fasten to the Liver, rather than the Lungs or other Parts.

This

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This Rallierie which is made in sport upon the Vertue of certain Remedies, is nevertheless ill grounded; and we shall give you an Experiment, which shews how the REMEDIES, though they have not Understanding, or any note of Direction, carry their Effects rather to one part than another.

Let them throw a little *Aqua Fortis* upon a Composition of Gold and Iron, that *Aqua Fortis* will fasten upon the Iron, dissolve it, and strain it self through the Gold, without making any Impression upon it. Pour *Aqua Regia* upon the same Composition; that Water will act upon the Gold, and not touch the Iron. Whence comes this Difference? Is it because those Waters have Understanding, the one to go and dissolve the Iron, sooner than the Gold, and the other to dissolve the Gold, rather than the Iron? No, without doubt: But it is because the insensible Parts of those Waters are of different Figures, as are the Pores of those Bodies also. So that when the *Aqua Fortis* meets with a Body such as Gold, the Pores of which are not proportionable to the Figure of its Points, it slides away without making any Impression;

pression ; but as soon as it meets with a Body whose Pores are formed in a manner proper to receive its Points, such as is the Body of Iron, it insinuates it self into it, and separates the Parts of it. We are to argue after this manner concerning the acting of Remedies upon some Parts of the Body rather than others. And to make the thing much more manifest, I imagin an Artificial Body made of Glass, of which the Lungs should be of Gold, the Liver of Iron. Let us then suppose *Aqua Fortis* in the Vessels of this Body instead of Blood ; is it not easie to be conceived that this Water being conveyed to the Lungs, will make no impression there, but that as soon as it meets with the Liver, it will fasten there and act upon it ? Let us imagine the thing another way ; suppose the Lungs of Glass, and the Liver of Gold, and at the same time the Conduites of the Liver obstructed with little parts of Iron, hard to be removed, what Course is to be taken, to remove those Obstructions, which those little Parts of the Iron cause in the Liver ? 'Tis but pouring *Aqua Fortis* into the Artificial Body : For then, as we may easily conceive, the Water, without hurting the Lungs, to which I suppose it will be carried by a Circulation

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on easie to be imagin'd, and without hurting the Substance of the Liver, will dissolve the Parts of the Iron in this latter Bowel, and clear the Passages. This is a Representation of what passes in the living *Body*, when *Remedies* act rather upon one Part than another.

If these Examples suffice not to make you apprehend the thing, there is yet another more manifest, recited by *M. Tournefort*, in that learned Thesis which he maintained the 14th of *November*, in the Year 1697.

Take two Strainers of brown Paper, the one dipt in Oyl, the other in Water; pour into each of these, Water and Oil mixed together, the Water only shall run through the Paper, (a) penetrated by the Water, and the Oil only thro that season'd with the Oil; suppose that these Pipes communicate together by means of certain Pipes, which carry to the one the remainder of the other, is it not true that all the Oil contained in the Strain-

(a) *Quæst. Medic. an Morbor. curatio ad leges Mechanicas referend.*

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ner dipt into Water, will run to the Strainer dipt in Oil, and that all the Water contained in the Strainer dipt in Oil, will pass through the Strainer dipt in Water?

Thus we must argue upon the Effects of *Remedies* that are prescribed, some to pass through the *Reins* and cleanse them, others to purge the Liver, others to moisten and cool the Lungs. These *Remedies* are carried to all the Parts; but they penetrate some rather than others, according to the Relation between them and the Matter, with which the Parts are moistened or composed.

Excess of Venery is to be numbred among these things which are most contrary to the good Constitution of the Liver, and most apt to create Obstructions of it. Besides, those Excesses weaken the Stomach, by dissipating the Natural Heat, and by that means cause a Corruption apt to engender Worms. I have seen Examples of it in several sick People, and among the rest in the Person of a young Man, whose Stomach being thus enfeebled by Excesses of that Nature, to that degree that he could not digest the lightest Meals, fell into a Fever, at the end of which I caus'd him

Of the Means

him to void 26 Worms in one Day, after which he recovered.

Too much Application of mind, and over-great Efforts of Study, cause more Corruption than the Excess above-mention'd; more especially when they set themselves to long and serious Reading presently after Meals. I saw a young Man in *Provence*, who having studied Night and Day fell sick of a lingering Fever, the cause of which the Physicians ascribed to a great Heat produced by the vehemency of Study, so that they only took care to cool him with Chicken Water, and the four cold Seeds, but all this signified nothing. A certain Country-Man gave the sick Person a Root which I know, and which I shall name in the Ninth Chapter, which caused him to void by Stool, such a quantity of VVorms, that the Physicians confess they did not understand his Disease. I make no scruple to recite this Example, considering it is no new thing to illiterate People sometimes better to understand Diseases, and the Cures of Diseases, than some pretended Men, who make the whole Art of Physick consist in compiling ingenious Systems, contemning the Observations of the Ancient, and preferring their own Imaginations, before what

whatever the Experience of our Predecessors has been able to inform them. For would they take but never so little pains to read the Ancients, and more especially *Hippocrates*, we should find in their Writings all those familiar *Remedies*, which Tradition teaches the most Simple, the Ignorance of which is certainly very much to the shame of those who ought to know more than the Vulgar.

C H A P. VII.

Of the voiding of W O R M S, and the Prognosticks which we ought to draw from thence.

WE shall only speak in this Chapter of the voiding of Worms which are bred in the Guts ; that which concerns the voiding of others being less considerable. There are several Circumstances to be considered in the voiding of *Worms* ; some, in regard of the *Person* ; others of the *Time* ; others that relate to the *Place* ; others to the *Excrements* ; others to the *Worms themselves*.

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The

Of the voiding of Worms ;

The Circumstances of the *Person*, are, Whether he be in Health or Sick ; whether he hath taken any Physick, or done any thing to which the voiding of such *Worms* might be ascribed.

The Circumstances of the *Time*, are, Whether the *Worms* are voided at the beginning, in the height or decline of the Sickness.

Those of the *Place*, are, Whether they be voided upward or downward ; and if upward, Whether at the Nose or at the Mouth.

Those of the *Excrements*, are, Whether the *Worms* come forth mixt with the Matter, or alone ; and the Quality of the Stools which preceded, accompanied or followed the voiding of the *Worms*.

The Circumstances of the *Worms*, are, Whether they come forth alive or dead, broke or whole ; wrapt up in any covering, or altogether free, dissolved or in their natural Form, of one colour rather than another ; thick or slender, in great or small Quantity ; all Circumstances very necessary to be observed, and

and which We shall examine in their Order.

The Person.

If the *Person* is in Health, and that the Worms are voided by the force of some Medicaments taken inwardly or outwardly applied, there is reason to judge that it was not so much the Natural Heat alone, as the Foreign Assistance that expelled them; and by Consequence that the Body not having Natural Heat sufficient to prevent the Corruption which fed those Insects, is in danger of Sicknes, if he be not careful to have recourse to evacuating and altering Medicines. If on the other side, the Person has taken nothing, which may have expelled the Worms, he may prognosticate well, since 'tis a sign that Nature has strength sufficient, to disincumber it self without Help.

If the Person be sick and the Worms come forth of themselves, he ought to have regard to the second Circumstance, which is that of *Time*, of which we are going to treat.

Of the voiding of Worms ;

The Time.

If they come forth in the Decline of the Disease, 'tis a good sign ; because Nature recovering then her Strength, 'tis probable they come forth for no other cause, but by reason the natural Heat encreases, and leaves them no more Corruption to feed upon. If they come forth at the beginning of a Sickness, 'tis an ill sign, because the Fermentation of the Humours not being yet over ; they cannot come forth, but only by reason of the sharpness of the Matter, as the most part of Physicians observe, and as *M. Tawry* has observed in his Treatise of Acute Diseases.

Levinus Lemnius (a), desirous to give a reason for this, says, that Worms out of a certain natural Sagacity, are sensible of the approaching Ruin of the Body where they are, and that for that Reason it is, that they quit the Place. To say the truth, *Levinus Lemnius* judges very favourably of the Prudence and Wisdom of Worms, of Dormice, and Mice. For my part, who cannot believe these Animals to be so Intelligent, I think 'tis better to stick to the Reason which I have alledged.

(a) *Levinus Lem. de occultis natura mira. l. I. c. 22.*

The Place.

In a Sickness, 'tis a better sign when they come forth downward, than when they are voided upward: because that usually when they are voided upward, it proceeds from one of these two Causes; either from some considerable Obstruction in the great Guts, which hinders them from taking their way downward, or from some Obstruction in the Gall-Passage, which hinders the Choler, that is so contrary to Worms, from falling into the *Duodenum*, and so forces the same Worms to mount up into the Stomach, and from thence into the Mouth.

Worms ascend not only from the Guts into the Mouth, but sometimes when the Mouth is shut in time of sleep as high as the Nostrils and are voided from thence (a). Which is not to be wonder'd at, nor ought it to be deemed a worse Prognostic, than if they were voided at the Mouth, considering the Communication between the Bottom of the Palate and the Nostrils. When the Person is in Health, there is no reason

(a) Eernel, de Morb. intestin.

Of the voiding of Worms;

to believe that he can be troubled with such Obstructions; since those Obstructions are always the Causes of very great Inconveniences. So that it is to be judged, that if the Worms are then voided upward, that the Person has been too long fasting, which forces the Worms, maugre the Gall which discharges it self into the *Duodenum*, to ascend into the Stomach, to seek for Food, and afterwards to come forth at the Mouth. *Levinus Lemnius* tells us (a), that he had several times seen Worms ascend in this manner, and come forth at the Nostrils: but he adds withal, that this was very dangerous in sick Persons, and without any hazard in persons that were healthful.

Sometimes Worms come forth upward, being drawn into the Stomach by the Nourishment which they find there: and an Example, which we shall recite in due place, of a Nun, that vomited Worms almost every Day when it grew near Dinner-time, is a sufficient evidence of it. We read in *Rassilly's Travels*, that in *Africa* there are Serpents to be seen, at the usual Hours of Repast, which come into the Houses to eat up that which falls from the Ta-

(a) *Levinus Lemnius*, l. 1. c. 22. de occult. natur. mirac.

ble, and go away again, when they have done, without doing any harm. And thus it is that Worms come at those Hours into the Stomach in search of Food. As to the Vomiting which then happens it is easie to perceive, that it proceeds from the hungry Worms pricking and preying upon that part.

Stools.

'Tis better that the Worms should be voided together with the Stools than alone; if it be at the beginning, or in the height of the Distemper. The reason is, because that when they come forth with the Excrements, 'tis to be believed that it is not from the Acrimony of the Humours alone, but through the Motion of the Matters which draw them along; whereas when they come forth alone, we can suspect nothing else but the viciousness of the Humours. 'Tis not the same thing when it happens in the Declination of a Disease, for we can draw no bad Prognostic from thence.

It happens sometimes, that after the voiding of Worms upward or downward, the Patient shall vomit up a black Matter like Ink, which is a mortal Sign, especially at the beginning of a Disease. When the

Of the voiding of Worms;

Worms come forth intermixed with the Excrements, and that the Excrements which accompany them are yellow, 'tis a good Sign either in Health or Sicknes; provided however that in Sicknes, it be not at the beginning. That which makes this a good Sign, is because the Yellowness of the Matter, shews that it is the Choler which has expelled the Worms, and consequently that that Humour, being in its natural Strength, may be able to repair the Vicioufness of the others.

When the Worms come forth alone in a Sicknes, and that by the strength of some Medicament, the Sign is good. And here we must observe, that the *Solium*, of which we have given you the Figure, came forth alone and without any mixture of Excrement.

The Worms themselves.

As to the Circumstances which concern the Worms themselves, the first is, what we have already mentioned, whether they come forth alive or dead: And with that we shall begin.

Alive

Alive or Dead.

We cannot draw from this Circumstance any Prognostic, unless you have a regard to such as concern the Condition of the Person; and in case the Person be sick, to those which concern the Time of the Sickness. This is then to be observed. If the Person be well, it imports not, whether the Worms come forth alive or dead: for if they come forth dead, 'tis because they could not find Corruption enough to live on: and if they come out alive, 'tis in search of Corruption in another place, which they cannot find in the Body. If the Person be sick, you must examine the various Times of the Sickness, and know that in the decrease of a Disease the Worms may come forth alive or dead, without any ill Symptom; and that for the same Reasons that they come forth of the Bodies of those that are well: but in the beginning or heighth of a Disease, 'tis quite otherwise; for then 'tis always a worse sign to see them come forth dead than alive: it being most likely, that 'tis rather the Venome of the Disease that has killed them, than the Strength of the natural Heat which has expelled them.

Broken

Of the voiding of Worms;

Broken or Whole.

There are none but flat Worms that come forth broken, and indeed they never come forth otherwise: but provided the Head does not remain in the Body, there is no bad Prognostic to be drawn from it: for that which remains behind dies soon; and is afterwards carried away with the Excrements, or by some slight Purge; whereas if the Head remain behind, the Worm recovers new strength and still encreases.

Wrapt up with some Covering.

If they come forth wrapt up with a Covering, 'tis a good Prognostic; because usually they are found all together in those Wrappers, not any more remaining in the Body. So that when they come forth in this manner in the declination of a Disease, we may prognosticate well. 'Tis also to be observed, that sick Persons that void these Pouches of Worms, provided it be not in the beginning of a Sicknes, recover sometimes sooner than they who void them alone and separate.

An Infant of about four Years of Age, reduced to Death's door, and given over
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by the Physicians (a), voided downward when it was least expected, a Bag as big as a Tennis-ball, wherein were found Millions of Worms; after which he presently recovered. It falls out sometimes, that instead of meeting several Worms in these Wrappers, you find no more than one; but the sign is not always the worse for that, considering that many times it happens that one Worm alone produces the Wrapper first of all, and after it has been wrapt up alone in it for some time, afterwards it breeds other Worms in the same place, which cause that Swarm which is there discovered. So that when there is no more but one in it, the reason of it may be, because the Worm has not been long enough enclosed in it to engender others.

Benivenius relates (b), that a Physician being tormented with a great Pain in his Stomach, and causing one of his Brethren to feel the Part affected, vomited a Piece of Flesh as big as a little Bowl, wherein was inclosed a Worm like a Kernel in the Shell; the coming forth of which procured him a speedy Cure. *Gabucinus* recites (c) an Example of the same nature of a Lady of Quality.

(a) *Amat. Lusit. Cent. I. cur. 40.*

(b) *Beniv. c. 88. de abditis.*

(c) *Gabuc. Comment. de lumb. c. 13.*

Of the voiding of Worms ;

These Bladders come forth sometimes without any Worms in 'em, which is an ill sign, unless the sick Person has voided *Worms* before, or have taken some Medicine, by which it may be conjectured that if no *Worms* were observed in the Excrements, they were killed in the Body by the Physic, and afterwards came forth in the Physic-stool, and could not be perceived. For it is to be observed, that when these membranous Bodies, vulgarly called Worm-bags, come forth alone, after taking Physic against the Worm, it is to be judged, that those membranous Bodies were broken or torn by the working of the Physic, and that the *Worms* contained within being dissolved by the Force of the same Physic, slipt away in the Stools, having lost both Form and Shape. But when these Membranes come forth of themselves without the expulsion of Remedies ; it may be feared lest the Worms themselves should have pierced the Membrane, and spread themselves over all the Cavity of the Guts ; or that the Membrane was separated, because it was grown old, as old Skin peels off the Hand. For then the Symptom is bad, for it is a sign that the *Worms* are at work elsewhere in the Guts ; and that having had strength enough to pierce the Membrane wherein they were enfolded, they may cause dangerous Corrosions in the part where they lye.

These

These membranous Bodies are spun by the Worms, as the Spider's Web is spun by the Spider, or as the Silk-worm's Wrapper is spun by the Silk-worm ; and as the Wrappers, wherein you shall find little young Caterpillars, are spun by the Caterpillars themselves. These Membranes, as *Hollerius* observes (a), take up the full extent of the Guts, so that they cover the Extremities of the *Milky Veins*, hinder the *Chyle* from entring into those Vessels, and consequently deprive the Body of its Nourishment. Which is one of the causes of the extraordinary leanness, of those that are troubled with Worms : so that when those membranous Bodies are voided, the Patient reaps great benefit by it, and the *Milky Veins* being no longer cover'd, the distribution of the *Chyle* is no longer hinder'd.

Sometimes these Membranes are engender'd when there are no Worms in the Guts ; and then their coming forth is a good sign which way soever it be, whether of themselves, or the Operation of some Purge. *Fernelius* speaks of an Ambassador of *Charles* the Fifth, who, after he had been very much troubled for six Years together, with

(a) *Holler. de Morb. intern. l. 1. c. 54.*

Of the voiding of Worms;

a Swelling, which reached from the right to the left *Hypochondrium*, and had tried in vain all sorts of Remedies, voided at length, by means of a strong Glyster, a hard and firm Body, about a Foot long, and hollow in the middle, which they who were present, took for part of the Guts: but the speedy ease of the Patient shewed it to be an extraneous Body. The same Glyster was repeated, and the Patient voided another membranous Body like the former. *Paul Pereda* speaks of one which was an Ell long, and had a Hollowness wherein you might have put your Hand. We must not forget to observe, that sometime it happens that these make a part of the Guts corroded by some sharp Humour. A dangerous sign in Dysenteries, and generally mortal. I preserve in Brandy several Membranes of this sort, which have been voided in inveterate Dysenteries, tho' the Patients that voided them could not be recovered by any Remedies.

Dissolved or Entire.

The Worms in the Body are sometimes dissolved in such a manner after they are voided, that there remains not the least appearance of them. Which is often the cause, as *Monardus* observes (a), that

(a) *Monard. Epist. l. 4.*

when the Nurſes are about to ſhew the Phyſicians the Worms in the Stools of their Patients, when they go to look, they can find none. When this happens, 'tis a ſign, that the Worms are not of a ſtrong Subſtance; ſo that thoſe which remain in the Body will eaſily give way to the Operation of Medicines.

Sometimes alſo they diſſolve in the Body by the means of certain Medicines, and are voided afterwards in Slime and Gravel. That Worms are thus diſſolved Experience ſhews us; and here is an Example that will not permit us to doubt of it. *M. de Gaen*, Doctor of the Faculty of Phyſic in *Paris*, told me a Story of a Nun, who almoſt every Day, a little before Meals, vomited a very great quantity of Worms, and one Day came to the Phyſic-School for his Advice, where he was upon a Viſit with the deceased *M. Perreau*, of the Academy of Sciences, Doctor of the ſame Faculty, and Brother of the famous *M. Perreau* now living: ſo ſoon as ſhe came, ſhe vomited ſeveral Worms, ſome of which *M. Perreau* carried away in a Box, which he put in his Pocket; and, when he got home, he found the Worms, being revived by the Heat of his Pocket, were more lively than before. Then he tried ſeveral Reme-

Of the voiding of Worms.

Remedies upon those Insects to see which would kill them soonest : and, having put Ice upon some, they presently dissolved into Water, and disappeared in a moment. He related this Circumstance in the Academy of Sciences, as a thing worthy to be observed, and M. *du Hamel*, a famous Member of that Academy, told me he was present at the recital.

The Colour.

Worms come forth, either Red, or White, or Yellow, or of a Lead-colour. Red are an ill sign; because that Colour denotes them to be fed with Blood; and consequently that they have corroded some Portion of the Guts; which cannot but have very bad Consequences.

White Worms presage neither good nor ill : the Yellow and Livid are bad Prognostics. For it is to be observed that Worms are usually of the same Colour with the Matter with which they are nourished.

Caterpillars that feed upon the Barks of Trees are Grey; those that feed upon Flowers are of several Colours, according to the Colour of the Flowers from whence they had their Nourishment. So it is with
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the Worms in the Body; those that are fed with Blood are Red; those that are nourished with *Chile* or Flegm are White; those that feed upon Choler are Yellow or Livid. Now because Choler is a Humour which Worms avoid, and for that Choler is a Balsom that hinders all the other Humours from corrupting, 'tis impossible, when the Worms feed upon Choler, but that this Balsom must be corrupted and tasteless; and so the Patient is in great danger, since there is no Corruption more pernicious, and more difficult to be corrected, than the corruption of things that serve to preserve others. *For if the Salt be inspid, wherewith shall it be salted?*

Slender or Thick.

If they are very big, 'tis a sign they have not wanted Nourishment: and so, the Corruption being very great, 'tis a difficult thing to keep it from growing still more corrupt, and so the Patient will receive great Injury by it, if he be not careful to evacuate speedily.

The Bigness of Worms proceeds also very frequently from their having others in their Bellies; which may be known by opening them, or squeezing them in pieces.

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Of the voiding of Worms ;

When this happens, 'tis still a worse sign ; for it denotes a greater quantity of Nourishment. And therefore the most part of those who void these *Worms* dye presently after.

Amatus Lusitanus (a) speaks of a little Girl that voided a *Worm*, which they trod upon with their Feet, and presently several other *Worms* came forth : He adds also, that the Girl did not live long after.

Panarolus recites two Examples of the same Nature, one of a young Man of sixteen Years of Age, and the other of a young Man of thirty : he says, that the first became *Hectic*, and died after he had voided a *Worm* four Months before, in the Belly of which was found another *Worm* : that the second fell into a *Tertian Ague*, and died at the end of seventeen Days ; after he had been freed from a *Worm* of the same nature. Yet I have seen some Patients void such a sort of *Worms* and recover.

In greater or less quantity.

When they come forth in great numbers, 'tis a good and bad sign both toge-

(a) *Amat. Lusitan. cent. 5. enrat. 46.*

ther; it is good, because always there is so much Corruption come away; and it is a bad sign, for that so great a number of *Worms* cannot have been in the Body, but that some of them must have corroded the Guts, which must have very ill Consequences. I say, but that some of them must have caused a Corrosion; for that when the *Worms* are so numerous, they starve one another; and the most hungry never fail to fasten upon the place that coops them up.

After we have spoken of the Ways for a Man to preserve himself from *Worms*, and recited the Prognostics which may be drawn from the voiding those *Worms*; it remains that we should set down the Remedies proper for the Cure of them. We must observe, that among those Remedies which are made use of for that purpose, some are good, some are dangerous. Therefore we shall make one Chapter expressly of Remedies which are to be avoided; and the other of those which may be practis'd with good success.

CH A P. VIII.

Of certain Remedies which are usually made use of against Worms, and which are to be avoided.

THere is great mistake about Remedies which are used against *Worms*: some Authors (a) advise Vinegar to kill them; others Powder of *Worms* dried; others Water wherein Mercury has been steeped; others Mercury in substance; others the Powder of Worm-seed; others Tobacco; all common Remedies at this Day, but from which it is better to abstain.

Vinegar does not kill all sorts of *Worms*; nay, there are some which it revives when they are dead; as we shall observe in the 9th Chapter. Besides that, what we have said of Vinegar in the 6th Chapter, is sufficient to make us believe, that it is many times more favourable than noxious to *Worms*.

The Powder of dried *Worms*, I must acknowledge, causes People to void many

(a) *Perdula. particul. therap. l. 3. c. 21.*

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VVorms, when it has been taken for some time, but they are those which it produces. And how can we imagine it should not produce VVorms, being it self but a Collection of the Seeds of VVorms. Do but cast this Powder upon the Earth, and sprinkle that Earth with VVater, and and put it in a Cellar, and in a little time you shall find it all full of VVorms. Throw the same Powder upon raw Meat, and you shall perceive it corrupted presently, and at the end of a few Hours, if it be Summer, all eaten with Worms. And therefore there is no depending at all upon what Authors tell us to the Advantage of this Powder; nor upon what is said among others by *Levinus Lemnius*, who speaks of it, as the best of all Remedies:

Water wherein Mercury has been steeped is good against Worms; but because it is to be used more than once, that it may work its Effect, it happens, that the subtile Parts of the Mercury which are mixed therein, offend the Nervous Parts at the long run, and cause Shakings of the Members. I add to this, that the most part of those Patients to whom I have prescribed this Water, have complained that it left behind great Heavinesses upon the Stomach, and very troublesom Swellings.

Certain Remedies usually

Mercury prepared, which is taken in Substance, is call'd *Aquila Alba*. They give it from 6, 7, 8, to 20 & 30 Grains in some Conserve, according to the *Ages* and *Temperaments* of the Patients. This *Remedy* taken alone may cause a *fluxing at the Mouth*, being often repeated, and therefore 'tis good to mingle some Purgatives with it; otherwise it is to be avoided; or at least not to be familiarly used, only when you have reason to suspect Venereal Worms, for then *Mercurius Dulcis* is to be advis'd.

The *Worm-Seed* is an Enemy to *Worms*; but it is at the same time an Enemy to the Patients; for it heats them considerably, and often causes violent Fevers. Some Persons say, That if you put a little of this Seed into hot Bread, it produces a great Number of Worms. I made Tryal of it several times without any Success, so that it may be a Fable. Nevertheless, I will not be positive in my Determination: 'tis sufficient that an Experiment succeeds once, to be lookt upon as a Truth; but it is not sufficient, when it failes several times, to make it accounted a falshood. I say this, because if it becomes us not to affirm a thing rashly, it behoves as little to deny a Matter of Fact, unless

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unless we are sure it is false. I made the Tryal in *October*, 1699. and it may be the Coldness of the Season, might hinder the Effect; and therefore I suspend my Judgment till I have made the same Tryal in the heat of Summer.

As for Tobacco, some affirm that by the frequent taking of it, a Man may free himself not only from Worms in the Bowels, but from all other Worms. They advise frequent Smoaking above all things, because the Smoak discharges abundance of Water, prevents the Corruption, which a superfluous Flegm or Spittle might cause in the Stomach and Bowels.

I cannot deny, but that Tobacco may be good against Worms; but if it have any Vertue against that Malady, 'tis in one quality which at the same time renders it very dangerous. As for the reason which is alledged, that it discharges much Water at the Mouth, when you Smoak; it does not follow from thence, that the Stomach and Bowels should be the less troubled with Flegm. On the other hand, they who smoak have more Flegm and Spittle than others; because the Smoak pricks the Glandules of the Jaws, and the Salivary Vessels, and presses out a Se-

Certain Remedies usually

rosity which discharges it self for the most part into the Stomach ; which is the reason that they who smoak can endure Abstinence longer than others ; because the Spittle which continually distils into their Stomachs, stupefies the Nerves of the Ventricle, and renders them insensible to the Impression of the Ferment which excites within us the Sense of Hunger. 'Tis not then the discharging of the Flegm, which ought to perswade us, that Tobacco is good against Worms ; 'tis the Caustic Salt which it contains, which is so biting, that it consumes the hardest Lumps of Flesh that gather about Ulcers ; so that this Salt intermixing with the Spit-
tle that glides into the Stomach, and which mixes it self also with the Nourishment, some part of it passes into the Guts, with the Excrements, and another part is distributed with the Blood through the whole Body ; whence it comes to pass, that where ever the Worms are, 'tis a difficult thing for them to escape the Operation of the Salt, which is carried every way. Now this Salt which renders Tobacco good against the Worms, renders it hurtful to the Body. For it pricks the tender and delicate Parts so violently, where it fastens, that it relaxes and puts the whole Composure quite
out

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out of order : It also excites convulsive Motions in the Nerves, which are very like those of the Epilepsie, as M. Fagon observes in his Thesis on Tobacco. Whence I conclude, that the Mischiefs which Tobacco, too frequently taken, produces, being greater than the Advantages we can borrow from it against Worms, the frequent use of it is not to be advised in this Distemper. I add to this, with the famous Author whom we last cited, That there is in Tobacco a Narcotic Sulphur far more dangerous, than its Salt. This Sulphur is of the Nature of Opium, which is equally dissolv'd in Oyl, Spirit, Salt or Water; which does not happen to any other Sulphurs. The Sulphur of Tobacco then being of this Nature, 'tis no sooner entred into the Body, but it is dissolved by the *Lympha*, or the Spirit which it meets, and then being disincumber'd from the Salts that bound it, the branchy Parts of it are engaged one within another and cause Obstructions, and Numnesses, which slacken the Course of the Animal Spirits. Thus, according to the various Disposition of the Body, one of these two Accidents generally happens; either that the pricking Salts of the Tobacco tear the Parts, and break the Connection of them, which cannot but hasten the Ruine of the Body ;

Certain Remedies against

Body; or else that the narcotic Sulphurs, of which it is composed, slacken the Motion of the Blood, and cause Apoplexies, and frequently, as M. Fagon observes, sudden and untimely Death. These are no Conjectures grounded upon studied Notions; but certain Truths, of which I myself have seen the Examples, and among others, this that follows, which deserves our attention.

In the Year 1696. in the Street St. Denis au Sepulchre, I tended a Patient, who fell into frequent Fits of an Apoplexy. After I had tended him for some time, and yet my Patient received not that Ease which I promised to my self, I consulted M. de St. Yon, a Doctor of the Faculty of Paris, who did not think it convenient to alter any of the Remedies which I had prescribed, nor the Method which I had followed. Thereupon I went on as I had begun, but the Malady still continuing obstinate, in regard my Patient took a great deal of Tobacco, I was afraid the narcotic Sulphur had had too great an effect upon him, or that the Salt, by pricking the Parts of the Brain, kept them too much relaxed, and so that either the Salt or the Sulphur was one of the principal Causes of the Distemper. I advised my Patient

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to leave off Tobacco by degrees, and afterwards to abstain from it altogether: he followed my advice, and had not forbore it it above a Month, but he grew better; his Attacks were less frequent, and not so tedious, and at the end of six Months he was cured.

In regard the *Thesis* which M. the *Proto-medicus* maintained upon Tobacco, shews us at large all the Accidents which the Use of that Plant may produce, I thought the Reader would be glad to see this Treatise in this Book, where he will find it translated into *French*.

Bontekoe is of the number of those who recommend the Use of Tobacco against the Worms, and looks upon it as one of the surest Means to prolong Life. This Author has always Sentiments which are peculiar to himself: He aggravates these things even to aver, that as we ought always to breathe in the Air, so we ought always to be puffing the Smoak of Tobacco, which is no less useful to us than Respiration. He adds, that Women ought to take it also; and that besides, it is so pleasing a Perfume, that they who judge of things without prejudice, prefer it before all others. This Discourse is too extravagant to deserve a Refutation; and

Certain Remedies usually

and it well enough becomes a Man, who makes no scruple to tell us in another Part of his Works, that Temperance is not a thing so necessary for Health; and that when a Man has eaten to excess, because Man is the longer before he grows hungry again, and therefore eats the less the next Meal, it happens that he never takes too much for all the Day. After which he adds, that Intemperance is no visible fault committed against long Life and Health, (a).

There is another Remedy which I have seen some Persons make use of, if nevertheless it may be called a Remedy, which is to drink Water wherein the green Husks of Nuts have been steeped. But that which I can certainly say of this Water, is only this, that it has no other effect, but to heat very much; and that it never expels any Worms. The reason why it was thought to kill Worms in the Body or to expel them thence, is because that if you water a Garden with this Water, you shall see all the Worms come presently forth in heaps in that part where you have sprinkled it; as *Charles Stevens* reports in his *Agriculture* (b), *Erasmus* in his *Colloquy*

(a) *Bentekoe*, p. 3. c. 4.

(b) *Carol. Stephan. Agricult. l. 3. c. 24.*

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upon Hunting (a), and as I my self have observed by Experience; but it may be that those Worms come forth in that manner, rather drawn forth than expelled by that Water, and that they shew themselves out of the Earth as they come forth when it begins to Rain, and as you see Fish leap above the Water, when the Coolness of the Night approaches. It may be objected that this Water, being very bitter, it is to be thought, that when it causes the Worms to come out of the Earth, 'tis rather because the Worms avoid it, than because they seek it. To this I answer, that bitter things are not always Enemies to Worms; witness Wormwood; the Stalks and Leaves of which are all covered with little Worms, as you may be convinced by a Microscope.

Baglivi, in his Piece which he lately published, reports some Experiments which he made upon VVorms, and which after him I made my self, which may serve to shew us the Unprofitableness, or the little Virtue of certain Remedies. In 1694. at Rome, he put living VVorms into Spirit of Wine, which lived in it full five Hours; he put others in VVine, others in a dissolution of Aloes, in that of the Extracts of Germander, and Tobacco, where they lived nine Hours: he put others toward Night

(a) *Erasm. Colloq. in Venat.*

Certain Remedies usually

in Oyl of Sweet Almonds, and found them alive the next Morning, but languishing: others in the Juice of Limons, and the next Day they were very vigorous: others in a Vessel half full of Mercury (*a*), and found them living the next Day, and making up to the upper end of the Vessel. I was desirous to make the same Experiments, after I had read those in *Baglivi*, and thus it befel me.

March 7. 1699. An Infant, to whom I had prescribed a Remedy against the *Worms*, voided downward eleven *Worms* all living: I laid hold of the Opportunity and presently put some of those *Worms* into lukewarm Milk, to prevent their dying; then I put two into *Aqua Vita*, where they lived two Hours; one into Spirit of *Wine*, where it lived four Hours: two into Juice of Limons, where they lived two Days: two into *Champaign-wine*, where I found them alive the next Day: of those two I took out one, which I put into generous *Burgundy* where it presently died: as for the other which I left in the *Champaign*, it liv'd four Hours more. I put one into Oyl of Nuts, where it died presently; One into Oyl of Sweet Almonds, where it liv'd ten Hours, but languishing; One into *Water*, wherein I had dissolv'd Extract of Aloes,

(a) *Georg. Baglivi, de praxi medica ad veram observ. ration. revocand. c. 9. Art. de lumbric. pueror.*

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and it liv'd therein eight Hours ; One into a *Viol* half full of Mercury, where it strove very much to have made its Escape ; however it liv'd ten Hours.

The 21st of the same Month I repeated these Experiments upon Worms, which a young Man of 20 Years of Age, and sick of a Tertian Ague had voided ; but the Effects were not the same in all, in respect of the time which I had observed. These were shorter liv'd ; but the same Liquors wherein others liv'd longest before, were now the Liquors wherein these dyed soonest ; and the same Liquors wherein others died soonest before, were now the Liquors wherein the same Worms liv'd longest.

I conclude from hence, that if some of those Remedies, wherein the Worms were immediately dipt, could not kill them, there is no great Effect to be expected from them, when being taken inwardly they are mix'd with other Humors, which must of necessity cause an Alteration of their Vertue. There is not any but Mercury, which I will except, for the extraordinary Struglings of the Worm, which I put in the Mercury, as also those which *Bacilivi* put into the same Mineral, sufficiently shew, that if it do not kill some Worms immediately, nevertheless it expels them with great Violence, and that is sufficient. But we have given
the

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the Reason a little before, why it is good to abstain from it. This is what I had to say about Remedies, which it is convenient to avoid : Let us pass to those which are proper to be made use of.

C H A P. IX.

Of Remedies proper against all sorts of Worms, which are bred in the Body of Man.

IN regard that Worms which are bred in the Body of Man, are not all bred in the Guts, as we have observ'd, but some in the Liver, several in the Head, several in the Heart, &c. We shall divide this Chapter into two Articles ; in the first we shall treat of Remedies proper against Worms that are bred out of the Guts. And Secondly against those that are bred in the Guts.

ARTICLE I.

Remedies against Worms that are bred out of the Guts.

Worms that are bred out of the Guts, are, as we have observ'd, your Cephalics, Nose-Worms, Ear-Worms, Teeth-VVorms, Pulmonic-VVorms, Epatic-VVorms, Heart-Worms;

VVorms, Blood-VVorms, Bladder-VVorms, Spermatic-VVorms, Ulcer-VVorms, Cutaneous, Umbilical and Venereal-VVorms: Of all which in their Order.

Against the Cephalic-Worms.

The Cephalics which breed in the Brain; sometimes in the Meninges, sometimes under the *Pia Mater*, are VVorms from which it is a difficult thing to set the Patient Free, considering they cannot come forth by the Nose, which is the only Vent to be had, if it were possible for them to have any. On the other side, if they happen to dye in the Head by the working of the Phyfic, they cannot but cause a Corruption, enough to kill the Patients; so that which way soever you consider the thing, this Malady is very difficult to be cured. However, it is not always incurable; and the best Remedy against these *Worms* is *Malmsey Wine*, wherein Radishes have been boiled, and let the Patient drink a sufficient quantity fasting. VVe have spoken of this Remedy in the first Article of the third Chapter. That is to say, how to kill the *Worm*, so that the Death of that Animal, may cause no Corruption in the Brain; which is a difficult thing to explain.

Against Worms in the Nose.

These *Worms* breed in the Root of the Nose, and are easily expelled by Errhines;

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the Juice of the Leaves of Betony snufft up into the Nostrils, is a good Remedy for that, as also the Powder of Betony.

Against Worms in the Ears.

As for *Worms* of the Ears, there is nothing better to kill and expel them, than the Juice of an Onion, or some few drops of Stale Urine, mix'd with Honey; or as *Dioscorides*, *Galen*, and *Aetius* teach us, a little of the Juice of Calamint. I have made use of the latter with good Success upon several Occasions. *Woman's Milk* also dropt into the Ear, is very good to fetch them out. The Smoak of bitter things mix'd with Antimony and received in at the Nostrils and Mouth, are also good Helps; as I have tryed with good Success in some Distempers. *Salmult* (a) says, That these Smoaks fetched out eleven *Worms* one Day from the Ears of one of his Patients. You may make Fumigations with the Seed of *Henbane* and *Wax* made up into small Candles, which being laid upon Charcoal will send forth an excellent Fume against these *Worms*. It is taken in at the Ears. This Remedy is in *Etmullerus*.

Against Worms in the Teeth.

The best Remedy against *Worms* in the Teeth, is to wash them every Morning

(a) *Salmult. cent. 2. Obs. 39.*

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and after Meales. And if there be any
Crufts upon the Teeth, to take them away
either with an Iron, or else with some
Drops of Spirit of Salt in a little *Water*.
The Root of Plantain chaw'd is a good
Remedy. Some Authors advise the bur-
ning the Seed of *Henbane*, and conveying
the Smoak into the Teeth, by which means
you shall see *Worms* come out of the Mouth,
which the Smoak carries away with it into
the Air : But this is a meer Fable. *Fore-*
stus (a) says, that these pretended *Worms*
are no more than an Appearance of *Worms*,
which is always seen in the Smoak of Hen-
bane-Seed. I was desirous to make a Try-
al, but I could never see that Appearance
of *Worms*. *Forestus* without doubt related
this Matter of Fact before he made Tryal ;
but that which surprizes me is, that ano-
ther Author should assure us he had made
Tryal, and that he had really seen those Ap-
pearances of *Worms*. Observe how he ex-
presses himself. *Frequently the Hands itch*
very much, by reason of Wax-worms and
Scurfs, which breed there and cause them to
itch. To cause them to fall off, some advise
the Seed of the Plant, for that reason call'd
Teign, or Choak-weed, that is to say, of that
sort of Henbane, which has little Baggs full
of small Seed, and make use of it after this

(a) *Forest. de egritud. dent. l. 14. Obs. 7. in Schol. p. 96.*
Columna secunda.

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manner. Having Charcoal lighted in a Chafing-Dish, and close by a Basen-full of Water, the Seed was cast upon the Fire, and the Patient held his Hands in the Smoak; and after he had held them long enough in the Smoak, he dipt them in cold Water, and presently appeared upon the Superficies of the Water an infinite Number of Worms, and it was positively said, that those Worms were the Scurf worms that came out of the Skin. When I had well considered this Operation, and viewed the Hands very accurately, at length I went so far that I discover'd the Juggle. I took a little piece of Wood and held it in the Smoak of the Henbane Seed, then I dipt it in Water, and there came out Worms in the same manner as before. In the very same manner I held a piece of a Slipper, a piece of Iron and several other things; and so having put in my Hand, wherein I felt no Inconvenience, I saw there came forth as many Worms from that, as from any of those who were troubled with itching. I took a Resolution to believe it to be an Imposture; and at the same time concluded, that those Seeds being set a smoaking, there was in it a thick Humour ready to congeal it self, which congealed with the cold of the Water, and so it lookt as if there had been Scurf Worms in it.

I made Tryal of this, but I could find nothing of Truth in it. I might hold in the Smoak whatever I pleas'd, and then put the

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the Things in a Bason of *Water*, there was not to be seen the least Appearance of a *Worm*. I was willing to try it upon the Hands of a Person that had a dry Scurf; but I could see nothing appear. And thus we see how many Authors are stult with Fables.

The Remedies which I recited are of no use in great Pains of the Teeth; for the Worms cause only a dull pain, slight enough, but accompanied with itching, as we have observ'd elsewhere. Therefore in violent Pains of the Teeth, you must have recourse to other Medicines. Most People cause them to be pull'd out to free themselves from the Pain, but that Remedy is never to be made use of, unless when they're loose. For which reason it is that *Erasistratus* observes, that in the Temple of *Apollo* there hung leaden Pincers to draw Teeth withal; to shew, said he, that when you have a desire to draw them, you must take care of using force.

Against Worms in the Lungs.

Worms that breed in the Breast and cause violent Coughs, as we have observ'd already, are very hard to expel. Yet there is one Medicine, which several Physicians

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have luckily made use of, to fetch them out with the Spittle; that is, to give the Patient the Juice of Horehound mixt with a little Honey, and to make him suck a little Oxyssel of Squills in the form of a Lohoch.

Against Hepatics.

There is nothing better against Worms of the Liver, than to take for several Mornings together the Powder of Wood-lice in a little Broath.

Against Cardiacs.

Against Worms in the Heart, let your Patient drink Juice of Garlick, Radishes, and Cresses: or take the Root of Gentian and Piony, of each two Drams, Myrrh one Dram; mix them together in fine Powder; put a little of this Powder into a little Drop of Water, and rub the Lips of the Patient several Mornings together with this Water. *Hebenstreite*, in his Treatise of the Plague, says, that Garlick alone is the speediest of all Remedies against this Distemper; and he recites a very remarkable Experiment upon this Occasion. A great Lord was troubled with several Distempers, which were all ascribed to the Heart, and in regard he could find no ease, a young

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young Man that studied Physic, and was well known to the Lord's Physician, being come, told him that he remember'd he had read, that there was a Worm which was sometimes found in the Heart, and against which all other Remedies except Garlick signified nothing; that it might be that the Lord might have such a Worm, and that it behoved them to try the Remedy. But his Lordship took no notice of the Advice of a young Man without Experience. He therefore went on obstinately in his own Method and died. He was opened, and they found in his Heart a Worm all black, with a long Head hard as a Horn. They took this Worm, and put it alive upon a Table in the midst of a Circle drawn with Juice of Garlick, the *Worm* began to contract it self on all sides, and getting still as far as it could from the Circumference of the Circle, at length, compelled by the smell of the Garlick, retired and took up the very Centre, where it died through the strength of the Smell.

Against Blood-worms.

There is nothing better against *Worms* that breed in the Blood than the Juice of Chervile. You must take half a Glassful three times a Day for a Week together; in

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the Morning fasting, in the Afternoon two Hours after Dinner, and in the Evening a little before Bed-time.

Against Bladder-worms.

Sal Vegetabile is good against Worms that breed in the Reins and Bladder; you may take half a Dram in the Morning in Broth:

Against Ulcer-worms.

The Juice of Calamint is good against these Worms, and Oyl of bitter Almonds.

Against cutaneous Worms.

The cutaneous Worms, as we have said, are Hair-worms, Wax-worms, Ox-worms, Bristle-worms and Toms.

There is no better Remedy against the *Crinones* than to bathe the Patient in luke-warm Water, anoint him with Honey by the Fire, and then scrub him well with a course Linnen-cloth.

To fetch out the *Crinones* or Hairy-worms, you must wash the Pustula's with Water mixed with an Oxe's Gall: or else bathe them with that which follows. Take six Drams of the Water of St. *John's*-wort, half a Dram

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Dram of common Honey, and a Dram of Pepper, and mix all together.

It will be sometimes requisite, that you may be rid of Wax-worms, to have recourse to inward Medicines, on purpose to Correct the Acidity and Viscosity of the Blood, and other nutritive Humours. Those are, to put in his Wine a little soluble Tartar, with a little Oxymel *scylliticum*: or to take sometimes in Spanish-wine, or in Mead, half a Dram of the following Composition. Take two Drams of *Elixir Vita*, a Dram of Extract of Wormwood, a Dram of Crabs Eyes, seven or eight Drops of Oyl of Sassafras; and stir the whole together till it be well mixed.

Against Ox-worms.

You must make use of the same Remedies against them, as against the Wax-worms. As for the Bristle-worms and Toms, I have set down the Means of their Cure in the third Chapter.

Against Navel-worms.

See Page 55. Chapter 3.

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Against Venereal-worms.

Mercurius dulcis is an excellent Remedy against these Worms; the Dose is from six to thirty Grains in little Pills: We have told ye in Chap. 4. Artic. 1. that the reason why Mercury is so efficacious against Venereal Distempers is only because of the Virtue it has against Worms.

Against Spermatic-worms.

As for Spermatic-worms, I shall propound no Remedy against 'em, seeing that, as I have observ'd, they are no Disease.

I have said in the second Chapter, that the *Solium* or Solitary-worm, of which we have given the Figure, may have entered into the Body with the Blood of the Father at the time of Conception; and I have alledged for a reason of it, that the Spermatic-humour in Man is all full of *Worms*. Which seems to contradict what I say here, that Spermatic-worms are no Disease. But I give this Advertisement, that when I spoke in the second Chapter, I only pretended to suppose, that there might be found among the Spermatic-worms some other *Worms* of another Species, as we see Animals of different Sorts, grow and nourish themselves upon

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upon other Creatures. And, after all, there is hardly one Creature, how small soever, that has not others about it, as may be seen by the help of a Microscope.

A R T I C L E II.

Remedies against Worms in the Guts.

I will not here bind my self to Copy out any other Person, I shall only speak what has befallen my self, without putting my self to the trouble to know whether other Authors have written of it, or no: I will begin with Remedies against long and round Worms; afterwards I shall come to the *Ascarides* and conclude with the *Solium*.

There are Remedies which kill Worms without expelling 'em, and others which kill and expel 'em both at the same time. Of the first there are some which are taken inwardly, others are outwardly apply'd. Those which are taken inwardly are, white Wine, Beer, Verjuice, Purslane, Purslane-seed, Colewort-seed, Citron, the Rind of bitter Oranges, Garlick, Onions, Powder of Gentian-root, Water wherein the same Root has been slightly boil'd, Coral-moss, the Shavings of Hartshorn and Ivory, burnt Hartshorn, Trochisks of Coral and Hartshorn, Butter, Oyl, Mustard, the Seed of Tansey in a little Syrup of Violets, Bole-armoniack, Water melted from Ice, &c. You

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You may take one of these things alone, or some of 'em mixt together; as the Seeds of Citron and Purflane, of each three Drams, Shavings of Hartshorn and Ivory of each a Scruple, Purflane water a small Glasseful; to be drank in the Morning fasting.

Or else,

Take Seeds of Carduus, Citron, Sorrel, Purflane, and Coriander prepar'd, of each one Dram, Powder of Diamargariton frig. half a Dram, Shavings of Ivory and Hartshorn of each half a Scruple, Sugar of Roses one Ounce; and if there be a Loosness, which it is proper to stop, Coral in fine Powder, and make an Opiate of it with Oxysaccharum, and Conserve of Roses and Succory.

The Juice of Plantane, old Treacle, bitter Almonds, Juice of Pomegranates mixt with Oyl of Olives, are also good Remedies. Spirit of Nitre, Spirit of Sulphur, Spirit of Salt dulcified, are given with good success: four or five Drops of the one or the other may be taken in a little common Water; but have a care of mixing the Spirits together. Oyl of Juniper-wood taken fasting, is very good against VVorms. Oyl of Hasel-wood is a certain Remedy. You may take four or five Drops in a little VVine, and more if it be for Persons in Years.

• VVhen Children have a Fever, the following

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lowing Julep may be given them to kill their *VVorms*. Waters of Purslane and Cichory, of each two Ounces, Confection of Hyacinth one Scruple, Powder of Coral-Moss as much, Coral prepared half a Scruple, Syrop of Limons half an Ounce, mix the whole together and give it to drink.

When the Fever is malignant, and that there be any reason to suspect *Worms*, as I saw by experience in the late riseness of malignant Fevers, you must do as follows. Take a sufficient quantity of Vipers-grass, Scabious and Purslane Waters, six Drams of Syrup of Limons, half a Scruple of Viper-powder, as much Powder of Coral-Moss, half a Dram of Sal-prunellæ, a Scruple of Confection of Hyacinth, and make up all into a Julep.

If together with the *Worms* and the Fever there be Convulsions, use the following Remedy.

Take four Ounces of Purslane-water, three Drams of Treacle-water, one Scruple of Confection of Hyacinth, as much of the Powder of Coral-Moss, and make of it a Potion to drink at once or twice, according to the Age of the Patient. Coral-moss, of which we have spoken, is so good against *Worms*, that it frequently happens, that a single Dram taken in Wine both kills and expels them at the same time.

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The Virtue of this Herb was unknown to *Dioscorides*, *Galen* and all the Ancients; we are beholding for the Knowledge of it to the Moderns, who have made several Tryals of it. *Matthiolus*, *Antonius Musa*, and *Mercurialis*, extol the Excellency of it above that of others, and relate several wonderful Effects of it, of which themselves were witnesses.

For my part I can say, that I have made use of this Simple, which succeeds upon several Occasions; and what I have seen with my own Eyes, makes me that I do not wonder at what most Authors who write of it, have reported concerning the virtue of Coralline.

Oyl is an excellent Remedy against *Worms*, if you take some Spoonfuls fasting. I say, *fasting*, for that then, the Stomach of the Guts being empty, the Oyl more easily embraces and stifles the *Worms*. A thing which I have tried very successfully in a great number of Patients that have been troubled with *Worms*.

The Force of this Remedy may be known upon all sorts of *Worms*, as *Earth-worms*, *Silk-worms*, *Grashoppers* and *Locusts*, &c. if you dip a Pencil in Oyl and anoint their Bodies, tho' you never touch the Head; for you shall see them presently grow motionless and dye, beyond the recovery of any Remedy.

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medy. The reason of this effect is, because the *Worm* dyes so suddenly that it can no longer breath. Now it breaths only by the means of certain little Wind-pipes that run through the Body; so that if you stop up those Pipes with any unctuous Matter, that hinders the Commerce of the Air, of necessity the Creature must dye for want of respiration, tho' neither the Head nor any part where the Pipes are not be rubb'd. This is so true, that if you put Oyl upon a *Worm* in any other part but where the Pipes are, tho' the Head be not spar'd, yet the *Worm* will live, and have its usual motion. If you put the Oyl upon some Pipes only, you shall see the parts where those Pipes are become immovable: but if you put it upon all the *Trachea's*, the whole *Worm* becomes motionless, and dyes in an Instant.

M. *Malpighi* made all these Tryals: and I say as much of Butter, which produces the same effect, and which, being taken in a Morning fasting, kills Worms more effectually than Garlick. We may observe here, that the effect of Oyl upon Worms is not a thing, which the Moderns first discover'd; the Ancients knew it as well as we, and *Aristotle*, in expresse terms, in his 27th Ch. of the 8th Book of his *History of Animals*, says, *that all Insects die when they are touch'd with Oyl.*

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Oyl. He also adds one thing, of which it is easie to try the Experiment, *that if you are not satisfy'd with rubbing the Body only, but will anoint the Head also, and then expose the Worm to the Sun, it will nevertheless, dye speedily.* Pliny also writes the same thing.

If instead of rubbing Worms over with Oyl or Butter, you drown 'em in Water, and leave 'em there for some time, they lye as it were dead; but expose them dry to the Sun, or sprinkle Vinegar upon them, they will recover in a little time; whereas, being rubbed over with Oyl or Butter, they never recover, whatever you can do. You may read *Mapighi*, upon this Subject, in his Treatise of *Silk-worms*. Of all common Oyls, Oyl of Nuts is the best against Worms; and at *Milan* Mothers have a Custom to give their little Children once or twice a Week Tofts dipt in Oyl of Nuts, with a little Wine, to kill the Worms. We shall observe here, that Oyl of Sweet Almonds does not work so quick an Effect upon Worms, as you may see by the Experiment recited in the eighth Chapter: Which proceeds without question from this, that the Parts of that Oyl are more porous, and consequently less able to hinder the Entrance of the Air into the Worm.

A Draught

A draught of Wine in a morning fasting is good against Worms ; more especially it is not convenient for Persons troubled with that Distemper to drink Water alone at Meals ; they must mix a little Wine with it, provided always it be not green Wine : For that, instead of being contrary to Worms, is apt to ingender 'em, as we have observed in the fourth Chapter. 'Tis better to drink Water alone, than Wine that is not come to maturity ; at least Water alone, provided it be pure, is not hurtful. And it is a very great Error to think that Water, where it is a usual Drink, renders People froward and ill-humour'd, as the Greeks imagin'd, who look'd upon *Demosthenes* as a rugged troublesome Person : for that was the Reproach they threw upon that Orator, when he laid their Faults before 'em in too lively colours. If we consider the matter, we shall find that Wine has disorder'd many Brains, that it has besotted many Persons of Wit, and often chang'd the most sweet and pleasing Dispositions into Savageness. Therefore the wisest Persons have been always temperate in the matter of Wine. *Demosthenes*, whom we last mention'd, never drank any, and therefore they call'd him the *Water-drinker*, as he testifies himself toward the end of his second *Philippic*. *Cicero* drank but very little. In a word, Wine may supply some good Sentences ; it sometimes makes People pleasant at Meals ; it produces an ea-

[O] siness

Remedies against Worms

liness in Conversation, as *Cicero* * observes: But as that Author so well insinuates, there is a great difference between what a Man of Conversation does, and what a Person does who is truly wise and in his senses. Therefore when I advise Wine against Worms, I mean the sober use of it; and that it be look'd upon as a Drink of which a Man ought to be very sparing.

I shall add here, that *Alicant* Wine is very good against Worms, as I found by the following Experiment.

Upon the 23^d of May 1699. at the House of Mr. the Abbot of *Soubise*, I administer'd a Remedy for the Worms to a Patient call'd *M. Pinguet*, whom I had cur'd a long time before of an Aposteme in his Breast. He voided three hours after by Stool, several little white Worms, as long as the little Finger, which seem'd to be dead. I took two of 'em and wrap'd 'em up in a piece of Paper, which I put in my Pocket. When I got home, I opened the Paper and found the Worms full of Life, and stirring about; which I attributed to the heat of my Pocket that had reviv'd em. Presently I bethought my self of putting one of 'em into Vinegar; which I no sooner did, but I saw it swim in the

* *Cicero pro Caelio versus finem.*

Vinegar like a Fish, or as you see those swim that are usually found in it. Then I put in the other, which did the same: I left 'em there two hours, during which time they did nothing but swim about. After that I put 'em into the Queen of Hungary's Water, where they were not so lively. Within a quarter of an hour I took 'em out again, and return'd 'em into the Vinegar, where they recover'd their former vigour. I then consider'd that I had prescrib'd *Alicant*-Wine to my Patient, with which he found himself eas'd: Which was the reason I was willing to put the Worms into some few drops of that Wine, to see whether they would die in it or no; they were no sooner in it, but they became motionless, and fell dead to the bottom of the Glass. I return'd 'em presently into the Vinegar, to try whether it would recover 'em as before; but it nothing avail'd, for they never reviv'd any more. This Experiment deserves so much the more to be observ'd, because a Man would think that *Alicant*-wine, by reason of the sweetness of it, should be less an Enemy to Worms than any other.

'Tis of moment to observe here, that when you would make these sorts of Experiments, to know what will kill Worms in the Body, you must never make 'em upon Earth-worms, or any others that are not bred in the Body. And this is evidently demonstrated by an Experiment of my own.

Remedies against Worms

May 25. 1699. I pour'd Vinegar upon Earth-worms, and threw other Earth-worms into Oil. Those upon which I pour'd Vinegar, dy'd sooner than those which were put into the Oil. From whence I conclude, that every thing that kills Earth-worms will not kill Worms in the Body of Man; and that the Experiments which are made upon the one, are no grounds of concluding the same effects upon the other.

Hempseed is also extreamly good against Worms: let it be well pounded, and put into a sufficient quantity of Water; then stir it about till it comes to be a kind of Paste; afterwards squeeze the whole through a linen Cloth, and there will come forth a kind of Milk, of which take a Glas fasting. This Potion kills Worms presently.

St. Johns wort is an admirable thing against Worms: It also preserves Cheese from 'em, if wrap'd up carefully in that Herb. *Quercetan* reports of this Herb, what I have found true by Experience. The manner of taking *St. Johns-wort*, is, to boil it in Water, and drink off the Water with a little Sugar: You may also make a Syrup of it.

This is sufficient for inward Remedies: now let us come to outward Applications.

Outward

Outward Remedies or Topicks.

THE Remedies which are to be apply'd outwardly, are the Gall of an Ox, Oil of Wormwood, Oil of Rue, or of Bitter-Almonds; with which may be mingl'd Pouder of Cummin-Seed, Pouder of Aloes, or of Lesser Centaury: Which Topics are laid upon the Navel. The following Emplaster is also very good.

Barley-meal, Juice of Wild Prick-Madam, or Worms-grass, of each a pint, white Vinegar four ounces; make of it an Emplaster, and lay it on the Navel. This Plaister not only kills the Worms, but allays and quenches the Fever. All these Remedies kill the Worms, but they do not expel them. Let us proceed to those which kill and expel at the same time.

Remedies that kill and expel Worms.

Remedies that kill and expel Worms at the same time, are Aloes, *Hiera Picra*, Pouder of the Rind of bitter Oranges, Rhubarb, &c. Dissolve *Hiera Picra* in a little White-wine, or else mix it with a little *Diaphoenicon*, or make Pills of it with a little *Agaric* and Syrup of Wormwood. The Pouder of the Rind of bitter Oranges is taken in Wine. *Borellus* recommends it very much, and says, that he saw a Person

Remedies against Worms

in a Consumption given over by the Physicians, who took this Remedy three times, and voided a great number of Worms, and so obtained his Cure. The Dose is a Dram every time. What * Borellus says, I saw happen not long since in the Person of a Patient above twenty six years of Age, who dry'd away every day, till he was cur'd by the same Remedy, which made him void a prodigious number of Worms.

For Children very young, you may infuse in Purflane-water four Scruples of Rhubarb, with six Grains of Cinamon, the whole press'd through a linen Cloth; and in the straining dissolve an Ounce of simple Syrup of Succory, and before the Child takes this Potion, give him a Glyster of Milk to draw the Worms downward.

Or else,

Infuse a Dram and a half of Rhubarb in a Glas of Purflane-water; strain it through a linen Cloth the next morning, and give it to drink at the usual time when the Child wakes. Repeat this Potion twice a week, till the corruption in the Body be evacuated. You may add to this Purge, to make it stronger, an ounce of Syrup of Succory made with Rhubarb. If it be a tender Child,

* Borel. Observ. Medicophy. Cent. 1. Observ. 60.

half an ounce will suffice. The Juice of Vervain is also a good Remedy *.

I have put Sugar in the number of those things which are to be avoided, if a Man will preserve himself from Worms. Nevertheless, when it is taken in great quantity, it sometimes kills and expels Worms. *Aldrovandus* speaks of a little Girl, who having eat a good Lump, voided a great Worm by stool. I saw the same thing happen to a little Boy, who had eaten a great quantity of Sweetmeats. Honey works the same effect when it is taken by Spoonfuls. You may make a kind of Spice-bread, which will kill and expel Worms, if you knead the Dough of the Spice-bread with Purslane-water, and Plantane seeds.

Sweet Apples, call'd in Latin *Melimela*, kill abundance of Worms: Raisins of the Sun have the same Virtue, being taken fasting in a morning in good quantity.

I have seen the good success of this Remedy in several Children. *Levinus Lemnius* † says, it is an Experiment which he has often try'd with good success; The Reason of which is, for that the Worms allur'd by the sweetness of the Nourishment, fill themselves so full, that they burst again; and because sweet things taken in abundance, loosen the Belly,

* *Manard. l. 2. Simpl. Medicam. ex novo orbe delator. c. de verbena.* † *Levin. Lemn. de occult. natur. mirac. l. 1. c. 21.*

Remedies against VVorms

of necessity the Worms must come forth dead or alive.

They talk of a certain way to angle for Worms in the Body, as you might for Fish in the Water; which is to fasten to a string certain Baits that allure Worms, and then to swallow the Bait; with this *proviso*, that the Patient have been fasting for some time, to the end the Worms being very hungry, may be the more apt to catch at the Bait; and drawing up the string, the Worm comes away with the Bait.

Schenckius relates an Example of this Artifice, and says, That a Serpent was one day drawn out of the Body of a Woman, by making use of a Bait compos'd of Flower and Honey. But he adds, that there was a Hook fastned to the String. This Expedient might be good to draw out of the Stomach Creatures that enter'd in through the Mouth, as they have many times enter'd into Persons sleeping upon the Grass: But as for the drawing out of Worms which are bred in the Body, 'tis a sort of practice upon which I have nothing to say. Some persons assure us, that they have seen it successful within this little while, by baiting the Thred with the Hearts of Pigeons. But that which I can assure 'em also is this, that abundance of Mountebanks have been seen to impose upon the People, by cunningly concealing Worms in the pretended Bait which they caus'd 'em to swallow.

*

Against

Against Worms in the Jaundice.

IN the Disease of the Jaundice, the Guts are often full of Worms, because the Bile, so opposite to those Animals, does not then discharge it self into the Guts. The best Remedy against these Worms, is to take, for several mornings together, the Decoction following. Celandine one handful, Leaves and Flowers of *St. Johns-wort* of each half a handful; Shavings of Ivory, Goose-dung pulveriz'd, of each three Drams; the two last in a little Bag: Put the whole into a Pot fill'd with a quart of Whitewine, and a quart of Wormwood-water: Set the Pot upon the Fire, and when it has boil'd for some time, strain it; and into the straining put an ounce of good Sugar: there will be enough for three mornings. The Choler that falls into the *Duodenum*, is frequently that which hinders the Worms from ascending into the Stomach. But in the Jaundice, because that Choler is retain'd in the Liver, they get more easily into the Ventricle: which is the reason, that when you give any Remedies against the Worms to those sorts of Patients, they many times void 'em upwards.

The 17th of July, 1699. at M. Dugono, the King's Secretary's House, toward *St. Landry*, a Servant that I tended, who had a universal Jaundice, vomited up one very big Worm,

Remedies against Worms

Worm, after he had taken a Syrup against the Worms; an Accident for which I could cite a great number of Examples. You must be very careful upon those occasions to use Ro-
mentations of Milk, to draw the Worms downward; for it behoves the Physician, as much as he can, to hinder the Worms from ascending up into the Stomach, for that then they are more difficult to expel, and may do more mischief.

Against Worms that cause the Pleurisy.

WHEN the Pleurisy is caus'd by Worms, a thing that often happens, as we have already observ'd, you must follow the practice observ'd by *Rulandus**, and which *Quercetanus*† highly recommends; which is to begin first with Purgation; where the Aphorism of *Hippocrates* || ought chiefly to take place, that when it is necessary to purge in a sickness, 'tis to be done at the beginning. They that follow this Method never fail of good success: and the experience which I have had of it several times, will not permit me to advise others to any other Method. Frequent Blood-letting upon this occasion is dangerous, tho it be not so in other Pleurisys.

* *Ruland. Centur.* † *Quercetanus, red. lib. 1. tom. 1. de pleur.*
lib. 1. cap. 29. sect. 3.

Remedies against the *Ascarides*.

THE *Ascarides* are a Worm difficult to be expell'd, and that for several Reasons. The first is, because those Creatures are remote from the Ventricle, so that the Remedies lose their Virtue before they can come where the Worms are. The second is, for that the *Ascarides* are wrapt up in viscous Humours, which hinder the operation of the Medicaments. The third is, because these Worms ascend sometimes into the blind Gut. Now that Gut being like the bottom of a Sack, the *Ascarides* keep themselves, as it were, intrench'd in that place. However it be, 'tis better to attack 'em below; and for that reason there is no better Remedy, than to put up into the Fundament a Suppository of Cotton dip'd in Oxes Gall, or in Aloes dissolv'd. One thing which I prescrib'd with success to several Patients, was, to put up into the Fundament a little piece of Lard tied to a string; leave it there for some time; and after that you shall draw it back full of Worms. Instead of Lard, you may use old Flesh salted. Glysters of the Decoction of *Gentian* are wonderful against the *Ascarides*. You may add to the *Gentian*, Birthwort, Succory, Tansy, Arsemart, Orage, and make a Decoction of it in Water and Whitewine: when it is

Remedies against Worms

is done, you may add a little of the Confection of *Hiera*.

For Children you may use the following Glyster.

Take Mallows and Violet-leaves, of each a handful; Colewort-leaves, one or 2 handfuls; Coriander and Fennel-seeds, of each 2 Drams; Flowers of Camomile and Little Centaury, of each a little handful: Make a Decoction of the whole in Milk, and dissolve in the straining an ounce of Honey, and two Drams of the Confection of *Hiera*.

Hippocrates advises, for the expelling of the *Ascarides*, to take *Agnus-Castus* Seed; to bruise it well with a little Ox-Gall, and then to mix the whole with a little Oil of Cedar, and make a Suppository of it with a little fat Wool.

Remedies against the Solitary Worm.

THE Remedies which we have hitherto repeated, are of no effect against the *Solium*; other Worms come forth sometimes of themselves, but the Solitary Worm never of it self. And as * *Hippocrates* observes, that if they cannot be expell'd by any Remedy, they grow old with those in whom they are bred. *Avicenna* says, That it resists

* *Hipp.* l. 4. de morb. art. 27.

Wormwood; and that it cannot be expell'd but by the use of Fern. Oil that so easily kills other Worms, works no effect upon this, because it is too big for that Liquor to stop up all the Windpipes that run along the Body of it: So that when you swallow Oil, the same thing happens to this Worm as besel the Silkworms, that Dr. * *Malpighi* anointed with Oil from the middle of the Body to the Head: for after they had lost all that motion in that part which had been rubb'd with Oil, they recover'd and had their usual Motion; whereas being rubb'd all over with Oil, they dy'd; neither Vinegar, nor any thing else being able to recover 'em.

The Remedy which the *Solitary Worm* is not able to withstand, is that by means of which our Patient was deliver'd. This Remedy does not only expel that Worm, but all others; and in case there be no Worms, it prevents the having any, because it purges away the Humours which are apt to breed any. The Remedy is this, which I promis'd to make known.

* *Malpig. de Bomb.*

Remedies against Worms

A Remedy to fetch out the Worm, whose Figure is at large in this Book.

TAKE *Diagridium*, Cremor Tartar, Diaphoretic Mineral, of each half a scruple; Rhubarb newly beaten in a Mortar, half a Dram; Root of Female Fern pulveriz'd as much; Flowers and Leaves of Tansey, reduc'd to Pouder, a little handful; Rind of the Root of Mulberry-Tree, and gather'd before the Mulberrys are ripe, one Dram. Mix all together, and take it in a morning in fat Broth at the usual time of waking. You may augment or lessen the Dose, according to the Age and Temper of the Patient: You must drink some Broth two hours after. And if after taking this Remedy the Patient has a desire to sleep, let him by no means be hinder'd from it.

Observations upon this Remedy.

That sort of Tansey is chiefly to be chosen which grows in the Fields, before Garden Tansey, because the first has more virtue; and generally speaking it may be said, that wild Herbs are strongest in their operation. Which caused a certain * Author to say, That Nature

* *Alex. Aphrodisc.* 1. 2. Problem. 52.

was the Mother of wild Plants, but the Mother-in-Law of Garden Plants. You must take the Rind of the Root of the Mulberry-Tree, before the Mulberrys are ripe; for that the Fruit being ripe, the Rind is depriv'd of part of the Humour which it contain'd before. Which agrees with what * Pliny says, That Roots have less virtue, being gather'd after the Fruits are ripe than before.

Another way of exhibiting this Remedy.

If you are in a place where you cannot have all the Ingredients which compound this Med'cine, take the Root of Female Fern only, and give two Drams bruised with Honey, or three Drams, in a Glass of White-wine.

Remark upon this Remedy.

This Remedy being only compounded of Fern-root and Honey, kills the Worm, but does not expel it: and therefore it will be convenient to purge the next day, otherwise there may be some danger from the Corruption which the Worm may produce. I advertise you moreover, that this Remedy does not always succeed the first time, and therefore 'tis convenient to repeat it 3 or 4 times, intermitting, and taking every other day.

* Plin. Hist. Natur. lib. 27. cap. ult.

Remedies against Worms

Another manner.

Take three Drams and a half of the Rind of the Root of Mulberry-tree, boil'd in a Choppin of common Water for half an hour: give this to drink in the morning fasting at two draughts, the latter half an hour after the first.

Remark upon this Remedy.

'Tis not with the Mulberry-root as with the Root of Fern, which purges not at all; the Mulberry-root is purgative, and loosens the Belly; the Rind works the same effect: So that you may spare purging the next day. But this Remedy does not expel the Worm at the first taking of it, it must be repeated like the other.

Another manner for sucking Children.

You may give to sucking Children half a Dram of the Pouder of Fern-root, in a little Milk or Broth, in a morning at two takings, one an hour after the other, taking care to purge the next day with something not too violent.

Another

Another for Children somewhat grown.

If they are a little grown, you may give 'em this Pouder in a little Syrup of Peach-flowers, or in Knotgrass or Plantane-water, according to the Circumstances which we are going to observe.

Remark upon this Remedy.

If the Children are bound in the Belly, put the Pouder in the Syrup of Peach-flowers; but if they are loose, give it 'em in Knot-grass or Plantane-water. For you must observe, that when you would expel Worms, you must mingle Astringents with the Remedies giv'n, when the Belly is too free: Otherwise the Med'cine voiding too soon, has not time to operate. You may distil a Water from the Root of Fern, which will have the same effect as the Pouder.

A Remark upon Fern-Root.

The Root of Fern is one of those things which are most proper against Flat-worms; and it has this advantage, that it agrees with all sorts of Persons, as well those who have Feavers as those who have not; Women with Child, and Women not with Child, Infants, young People, old Folks: it allays all the

[P]

Symp-

Remedies against Worms

Symptoms of Sicknesſes, and procures an extraordinary tranquillity: Beſides that, it cauſes the Milk to come in Womens Breasts. Some Authors have written that it was dangerous for Women with Child; but they are deceiv'd, as *Spigelius* ſhews in his treatiſe, *de Lumbricis Lat.*

An Opiate againſt the ſame Worm.

Here is an *Opiate* which I made uſe of upon ſeveral Occaſions; and by means of which, not long ago, I fetch'd out a *Solitary Worm* like that which is here deſcrib'd in the Figure, but ſhorter and narrower. The Root of Female Fern, and Rind of the Root of the Mulberry-tree, are the Ingredients which compound this *Opiate*, and to which I chiefly attribute the Virtue which it has againſt Flat-worms.

Take Coral-Moſs, Water-Germander, Vervain, Pennyroyal, Garden-Origan, of each one handful; Roots of white Dittany, Fern, Angelica and Gentian, of each two Drams; Rind of the Root of Mulberry-Tree, one Dram and a half; Seeds of Muſtard, Purſlane and Crefſes, of each one Dram; Pepper half a Dram, Saffron half a Scruple. Make a Powder of the whole, and with ſcumm'd Honey mix it into the form of an *Opiate*; to which you may add half a Scruple of Oil of Vitriol. The Doſe is half a Dram, a Dram,

or a Dram and a half in a morning fasting.

These are not the only Remedys which may be made use of against the *Solium*, but these are they which I have try'd, and that with good success. *Gulielm. Fabricius, Philibert Sarrazenus, John-James Craffius* recite some Examples of Worms of the same nature, which as they assure us they expell'd out of the Body: They tell us also the Remedies they made use of, and at the same time the different Symptoms of the Patients, with several Circumstances profitable to be known. I am apt to believe the Reader will not be displeased to see in this place, the Letters which those Authors wrote upon this Subject.

[P 1]

A Letter from G. Fabricius to Philibert Sarrazenus. (a)

“UPON my return to Lyons, I saw
 “there a Flat Worm of a surprizing
 “length: And as it is a matter of great cu-
 “riosity, I will do my self that kindness to
 “give you a relation of it. A Lady of that
 “City of about twenty years of Age, of a
 “very tender Complexion, was troubled
 “with frequent pains in her Belly, weak-
 “ness in her Stomach, inclinations to vomit,
 “Belchings, and a general loathing of all
 “sorts of Meat. She sent for me about the
 “end of April, 1609. I caus’d her, upon
 “the first of May, to take a Pouder com-
 “pos’d of Rhubarb, Turbith, Senna; to
 “which I added solutive Syrup of Roses,
 “made up with Rhubarb, Agaric, and Sen-
 “na. This Remedy caus’d her to void a
 “Flat Worm by Stool which she shew’d
 “me, and at which I stood amaz’d, for it
 “was twenty hands breadth in length, about
 “six Corns broad, and two in thickness:
 “Now it is dry’d it is not so broad; it has
 “Interstitiums or Spaces all the length of the
 “Body: These Spaces are distant about two

(a) Guilhelm. Fabric. cent. 2. obs. 20.

" Grains one from the other, and rais'd on,
 " the one side like the Teeth of a Saw. When
 " you feel the Worm from the Head, to the
 " Tail, it feels slippery; but if you pass your
 " finger from the Tail to the Head, it feels
 " somewhat rough. 'Tis all over black,
 " with black little Spots in the middle of the
 " Spaces. One of the Extremities is as slender
 " as a Thred, and the other as broad as
 " the rest of the Body. I never saw any
 " Head it had, neither did I ever see any
 " in such sorts of Worms. After this Worm
 " was come forth, I purg'd my Patient; and
 " afterwards giving her corroborating things,
 " she was perfectly recover'd. She is at present
 " in perfect health; and as for the
 " Worm, I preserve it dry'd, and look upon
 " it as one of the greatest Rarities I have.
 " This, Sir, is a brief History of this Worm,
 " the Description of which I oppose to that
 " false and ridiculous Report which was
 " spread about in Switzerland and Burgundy
 " of the Monster of *Payerne*. Farewel,

Payerne, August 28. 1609.

'Tis very likely that this Worm was a
 maim'd *Solium*. As to the black Spots, there
 is nothing peculiar in it, considering that
 when this Worm is too full of Nourishment,

[P 3]

those

Remedies against Worms

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Remedies against Worms

those Spots may appear in certain parts, as *Sennertus* observes *, and disappear when they are empty. There is one thing to be observ'd here, which is the Patient's loathing all sorts of Nourishment, whereas commonly they who are troubled with this Worm, are tormented with an extraordinary hunger.

Sennertus. l. 3. par. 2. Sect. 1. c. 5.

*The Answer of Philibert Sarrazenus
to G. Fabricius.*

“ **W**HEN I receiv'd your Letter,
“ wherein you speak of a Flat-worm,
“ I had at the same time a Patient that la-
“ bour'd under the same Disease; therefore
“ because I stay'd to see the success of the
“ Med'cines which I prescrib'd her, I forbore
“ writing to you, till I could send you some
“ account of it. Now then in few words,
“ this is what I observ'd in that Distemper,
“ and the Method which I took. The La-
“ dy is about four and thirty years of Age,
“ indifferent plump; but was so subject in her
“ Infant-years to Worms, that she frequently
“ voided downwards all flat Worms, in
“ length an ell, an ell and a half, and some-
“ times more, and one finger broad. When
“ she was marry'd she had several Children,
“ who all dy'd in a few months after they
“ were born; which we ascrib'd to the bad
“ disposition of the Mother. This Fund of
“ Vermin grew within her to such a head,
“ that for these last years she hath voided
“ 'em downward, upward, and at the
“ Nose. When they were about to come
“ forth, the Belly of the Woman swell'd,
[P 4] “ and

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“ and suffer’d the same motions as the Belly
“ of a Woman with Child when the Birth
“ turns in the Womb. A little while after
“ they ascended up to the Mouth, and she
“ drew out with her fingers Worms of a
“ considerable length: This motion of the
“ Belly continu’d sometimes, and then the
“ Patient fell into a *Delirium*. The number
“ of Remedies prescrib’d her are incredible;
“ the common Med’cines, Garlic, Coral-
“ moss, Pouder of Worms, Treacle, Worm-
“ wood, all were made use of, but all in vain.
“ At last this poor Woman, so long afflicted,
“ sent for me, and I prescrib’d her the fol-
“ lowing *Appozem*.

“ Take of Roots of Dittany, Fern, Polypody
“ of the Oak, of each one ounce; Rind of the
“ Root of Caperbrub, Tamarish, and the mid-
“ dle Rind of an Ash, of each six drams; Ger-
“ mander, Ground-Ivy, Wormwood, Sage,
“ of each one handful; Little Centaury, a
“ little handful; Aniseeds, Seeds of Citron,
“ Purslane, and Worm-seed, of each two
“ Drams; Coral-moss half a handful; Sen-
“ na, Seed of *Carthamus*, of each two Oun-
“ ces; *Trochisks* of *Agaric*, half an Ounce;
“ *Citron* and *Mirobalan*-Peels, of each three
“ Drams. Boil the whole in a sufficient quan-
“ tity of Water till it comes to ten ounces of
“ Liquor. In the straining, dissolve an ounce
“ and a half of Syrup of Succory made up
“ with Rhubarb, as much of the Syrup of
“ Peach-

“ Peach-flowers, *Oxymel* of Squills, one ounce.
 “ Mix the whole, and make an *Apozem* for
 “ four Doses; put into the whole four Scr-
 “ ples of *Diamargariton frigidam*. Take of this
 “ *Apozem* four mornings together, one Dose
 “ every time, wherein you shall dissolve five
 “ Drams of *Diacarthamum*, and one Ounce of
 “ Syrup of Succory made up with Rhubarb.

“ Three hours after she had taken this *A-*
 “ *pozem*, I order'd the following Ointment
 “ to be apply'd to her Belly very warm.

“ Take of Unguent of *Agrippa*, 3 ounces;
 “ Pulp of *Coloquintida* pulveriz'd, six Drams;
 “ *Scammony*, half an Ounce; Myrrh, Aloes,
 “ of each three Drams; new *Ques Gall*, two
 “ Drams; white *Agaric*, five Drams; Pouder
 “ of the Root of Sowbread, one Dram and a
 “ half; Saffron as much; Oil of bitter-Almonds,
 “ six Ounces; Juice of Garlick, and Water-
 “ Germander, of each half an Ounce. Mix and
 “ stir 'em all over the fire, till the Juices are
 “ consum'd, adding thereto one ounce of *Pe-*
 “ *troleum*, with a sufficient quantity of Wax,
 “ and make an Unguent.

“ Toward evening I caus'd her to use
 “ a Glyster of Milk, compounded of se-
 “ veral sweet things proper to draw down
 “ the Worms. The Worms thus attack'd on
 “ every side, came forth in clusters, some a-
 “ bove twenty foot long: After which my
 “ Patient found her self much better; she
 “ had a more lively Colour, the pains in her
 “ Belly

Remedies against Worms

"Belly were much appeas'd; she slept, and
"her *Deliriums* left her.

"Besides these Remedies, I caus'd her to
"take a Dram and a half of Mercury in sub-
"stance, all pure, and pass'd through a piece
"of Leather, and from that time she was no
"more tormented with the Worms. But
"here is one thing to be observ'd in re-
"ference to the Mercury, that my Patient,
"who then wore a Plaister for the Matrix,
"in a little time after found the Plaister full
"of Mercury. Which shews us how subtil
"the little parts of the Mercury must needs
"be, to work in that manner through the
"Guts, Muscles, and all the Coverings. I
"have at present advis'd my Patient to eat
"Rye-bread, to use *Venice-Treacle* from time
"to time, and to take the following Pills.
"R. Mass of *Hiera* Pills compos'd with *Ag-*
"ric, half an Ounce; Extract of *Elecam-*
"pane, two Drams; Myrrh, a Dram and a
"half; Coral-moss, four Scruples; Saffron one
"Scruple. Redpce the whole into a Mass,
"with Syrup of Cichory, made up with Rhu-
"barb. Make five Pills of one Dram, and
"take two of these Pills two days together,
"one in a morning fasting. Adieu. I will
"acquaint you with the Success of this, &c.

Another

Another Letter from G. Fabricius
to Craffius.

I Cannot but impart to you my Observations on Flat Worms. In 1604; the Daughter of a Burgefs of this City, whole name was *Daniel Romay*, about nine years of Age, was molested with a great swelling, attended with an Inflammation, generally call'd a *Bubonoccele*. Now because I design'd to make an Incision of the part, I prepar'd the Body for that Operation, with *Apozems* and *Med'cines*; And after I had given my Patient a Potion of solutive Syrup of Roses compounded with Rhubarb, Agaric and Senna, she voided by Stools a piece of a Flat Worm about 7 hands breadth in length. Some few days after I perform'd the Operation, and having brought the Sore to a perfect Cure, the Child recover'd, and still continues in health. I have this Worm at home dry'd, and I preserve it carefully in my Closet.

The last Year a Lady of Quality in this City ask'd my Advice as to a Distemper in her Matrix. She told me that she felt a coldness that was uneasy to her, about the Region of her Navel, and the lower part of her Belly: but because she complain'd of a pain in her Head besides, I prescrib'd her
“ Ceph-

Remedies against Worms

“ Cephalic Pills, which wrought very well,
“ and made her void downwards a piece of a
“ Flat Worm nine hands breadth in length, of
“ the same breadth and shape as that which I
“ have describ'd in my first Letter.
“ 'Tis some Years ago that I cur'd of a
“ long and dangerous Sickness a little Girl
“ who voided a Worm very like this. Thro
“ the negligence of those that were about her,
“ some part of that Worm was thrown away,
“ so that there was only one bit that came to
“ my hands. When you pass your finger
“ upon these sorts of Worms, they are rough
“ on the one side, and smooth on the other.
“ It was never my chance to see one of 'em
“ whole. I omit several Examples, because I
“ have not leisure. Farewel.

A Third Letter from G. Fabricius
to Crafftius.

“**T**HAT I may not write to you with-
“out sending to you something parti-
“cular, it behoves me now to impart to your
“knowledg what I had not leisure to observe
“in my last Letter upon the Subject of Flat
“Worms. I must tell you then that a Lady,
“whose name is Madam *Mace*, now M.
“*Rohault's* Widow, who was a famous Apo-
“thecary of *Lausanne*, was very subject in
“her Youth to Palpitations of the Heart,
“Weakness of the Stomach, and Obstructi-
“ons in the Bowels. She took several Reme-
“dies by the prescription of Physicians; and
“from time to time, after a certain Purge
“which she took, sometimes she voided very
“long pieces of Worms. When she was
“marry'd, and that she began to have Chil-
“dren, her Palpitations ceas'd, her Colour
“became better; but she was still incommo-
“ed with a *Lienteria*, during which she void-
“ed downward several pieces of broken
“Worms, some six, some nine, others ten
“hands breadth in length. Now that which
“is to be observ'd, is, that every time she void-
“ed those pieces, she felt the Worms break
“ in

Remedies against Worms

“ in her Bowels. However she had several
“ Children for all this, most Boys, of which
“ several are living. One day, after she had
“ taken a Remedy, she voided a piece of a
“ Worm seven ells in length, according to
“ the measure of *Lausanne*, that is to say, six
“ hands breadth to an ell; the rest of the
“ Worm remained in her Body; but within
“ a few days after she voided the greatest
“ part of it, without perceiving, as before,
“ that any thing broke; which made her be-
“ lieve that she was absolutely rid of that
“ Worm. In a word, nothing has happen'd
“ to her of the same nature since that time;
“ and the looseness with which she had been
“ always troubled, stop'd; so that for these
“ twelve years last past she has enjoy'd a per-
“ fect health. I understood this from her Hus-
“ band himself, who told it me in his Wife's
“ presence. They both added, that if all the
“ Bits had been put together, they would have
“ made above twenty ells.

“ At *M. Villadin*, the Governour's House,
“ there was a Servant-maid, about one and
“ thirty years of Age, who has been tor-
“ mented for a long time with this sort of Flat
“ Worm: And that which is worthy Obser-
“ vation, is, that for some years she has not
“ fail'd to void every year, upon *St. John Bap-*
“ *tist's* day, several long pieces.

“ *Madam Margaret de Mullinen, M. de Vil-*
“ *ladin's* Wife, in the year 1607. shew'd me

“ three

" three of those pieces of Flat Worms which
 " her Servant-maid had voided; some of
 " which were above six ells long. I must not
 " omit to tell you, that the Servant-maid feels
 " a certain coldness continually in her Belly,
 " which very much annoys her: Many times
 " also she is troubled with a *Diarrhea*, and
 " sometimes very hard bound. Setting this a-
 " side, she is in good health and lusty, and
 " never complains much of her Distemper. I
 " purg'd her sometimes with Pills made of
 " Aloes, Rhubarb, Agaric, and Extract of
 " *Coloquintida*. I caus'd her also to take a
 " Pouder to kill and expel Worms. But one
 " thing I must tell you something wonderful,
 " which was, that a certain Empiric having
 " caus'd her to take three or four times a
 " *Ptisane* of *Coloquintida* alone; notwith-
 " standing the violence of the Purgation, she
 " voided no Worm. Nevertheless, when *St.*
 " *John Baptist's* day approach'd, those pieces
 " of Worms came forth of themselves by a
 " critical motion of Nature.

Remark

Remedies against Worms

Remark upon what Fabricius says, That he never saw a Head upon Flat Worms.

Fabricius says, That he never saw a Head upon these sorts of Worms; that is to say, that that part is usually separated, and remains in the Body. When that happens, be sure to repeat the Remedy which you made use of to expel the Worm, and then the Head never fails to come forth. About two months since I set a young Lady of Quality free from a *Solitary Worm*, which was very troublesome to her. That Worm came forth in three pieces, which put together made about an ell and a half. The next day I repeated the Remedy which I had caus'd her to take, at which time my Patient voided a fourth Morfel about the length of the third part of an ell, where the Head was; and that perfected the Cure. I have had many such Accidents, which I pass over in silence for brevity's sake.

C H A P. X.

*Of Cautions to be observ'd when you take
Remedies against Worms.*

IT suffices not for the killing and expelling of Worms to take the Remedies which we have set down in the preceding Chapter. There may be danger in keeping to those helps alone; for that the Worms attack'd not dying presently, or not dying all at a time, it frequently happens that they which have withstood the force of the Med'cines, being thus oppos'd and disturb'd, bite and pierce the Guts. There is one Precaution to be taken against this danger, which is, not to remain long without eating. Many Mothers have need of this Advice, who for the most part believe, that when their Children have Worms, they must be kept fasting, to avoid, as they say, corruption; not considering that while they endeavour to avoid one mischief, they expose their Children to be devour'd by the Worms. For those Creatures, when they are very hungry, fail not, early or late, to pierce the place which incloses 'em.

[Q]

'Tis

Cautions to be observ'd

'Tis some years since that a good Lady near *Versailles*, to whom a Child had been delivered to wean, told me she believ'd her Child had Worms, and ask'd me what was to be given it. I examin'd the Countenance of the Child, his Eyes, his Pulse, his Belly; and believing the Child was really troubled with Worms, I advis'd the Lady to give it a little Coral-moss from time to time in Broth. This Remedy not proving successful, yet the Child voiding Worms every day, the Lady thought it was because new Worms bred every day; and to prevent that, she kept the Child from any more Victuals than was just necessary: But the Infant had not fasted in this fashion above four days, but it ceas'd to void Worms. Which the Lady taking for a good sign, continu'd her keeping the Child short of Food for some days: at the end of which the Child complain'd of violent gripings in the Belly of it. And because the Pain grew more tormenting every day, as appear'd by the roaring of the Infant, they ply'd it with Purges, Fomentations, and several sorts of Waters proper against the Cholic; which proving all ineffectual, they brought it to me to *Paris*. So soon as I saw it, I asked what Method they had taken with it since I had seen it last; and understanding what I have already relat-

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ed, I could not but pity the Condition of the poor Child that had been so ill govern'd, and told 'em, I was afraid that the Worms, being famish'd by the Child's being kept without Victuals, had already pierc'd the Child's Guts; which the Event soon verify'd, for the Child dy'd within a few days, and being open'd, his Guts were found all full of Worms, and so pierc'd by the Worms, that they were like so many Sieves.

It must be then taken for a certain Rule, that they who are troubled with Worms, are to be fed better than others: We must do by them as we do by Rats and Mice in a Study, where Papers of Consequence are which we desire to preserve from those Vermin; we must leave 'em Bread and Water to stuff themselves withal, to prevent their preying upon other things. But as much as it is for the advantage of those that are troubled with Worms to eat plentifully, 'tis no less dangerous for those that are freed from Worms to gorge themselves; for then it behoves the Person to live as temperately and soberly as possible, to avoid all sort of corruption, otherwise we may be liable again to the same distemper. This Sobriety however ought to have its rule, and not to be practis'd over-exactly in Children, because that having more natural

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Cautions to be observ'd

tural heat than others, and withal a Body that is growing every day, they stand in need of more plentiful and frequent Nourishment; and therefore 'tis observable that young People bear Hunger more impatiently than Persons grown in years. For which reason *Hippocrates* says expressly, in one of his Aphorisms, That Children, and such as have not yet done growing, ought to be allowed more Nourishment, otherwise they must needs dry up, because their heat is greater.

There is another Caution to be observ'd when you administer Remedies against the Worms; which is, to intermit those Remedies from time to time, for fear lest the Worms being too obstinately attack'd, should quarter themselves in the Cavity of the Colon-Gut, which those Remedies do not easily reach; or lest they should turn their Bodys in such a manner as to be safe from the Operation of Physic: For both the one and the other happens sometimes, I have known it by experience.

In 1694. in the month of *August*, a young Man of two and thirty years of Age, who sometimes voided Worms, came to me for my Advice. I prescrib'd him a Remedy which at first caus'd him to void two great Worms; and which being repeated

repeated three days after, expell'd three more. My Patient perceiving he was not yet deliver'd from all his Vermin, and knowing by experience the Virtue of the Remedy he had taken, thought, that instead of intermitting the use of it between whiles, as I had order'd him to do, it would be more convenient for him to continue it every day. But he was mistaken, for instead of voiding a great number of Worms, as he was in hopes to have done, he voided no more: Upon which he came to me again to tell me the cause of his surprize. In answer to which, I bid him stay two days before he took his Med^cine again, and then repeat it: He took my advice, and voided nine two days after: He omitted also two days more, then took his Med^cine, and voided six more; and thus keeping to this Alternative for three weeks together, he was quite cur'd. This Example shews that it is not always an obstinate use of Med^cines upon which the Cure depends. The point is, to know your time, seeing that in the cure of a sick Person, as well as in the management of Business, too much precipitation is often the cause of miscarriage.

There are occasions, when the forbearing of all manner of Physic is a great means to reestablish the Health of a sick Person:

And

Cautions to be observ'd

And if (a) *Pliny* the younger says true, when he speaks of Eloquence, that it is an Art which consists no less in silence, than in speaking: We may say the same thing of Physic, that it consists no less in abstaining from prescribing Remedies, than in prescribing 'em.

Another important Precaution, of which I have not yet spoken, and with which we will conclude this Chapter, is, not to take Remedies against Worms but in the wain of the Moon, as M. (b) *Borelle* advises.

'Twas a long time before I thought this Maxim would find any favourers among those that read it: I wonder'd that a Man so learned and discreet should prescribe such a Method, which I look'd upon as a mere Imagination. But my experience has since discover'd to me, that I deceiv'd myself; and I can make that out by the Examples that I have seen, that of a hundred sick People that have been troubled with Worms, and took Remedies against the Worms at another time, there were not

(a) *Accepi, non minus oratorium esse tacere quam dicere. Plin. jun. Epist. l. 7. Epist. 126.*

(b) *Borel. Hist. & Observ. Medico-Phys. Cent. 1. Observ. 89 & 90.*

twenty whose Remedys prov'd successful; whereas on the other side, of a hundred Patients that take Physic for the Worms in the Wain of the Moon, there will not be twenty that shall not receive considerable benefit thereby. Which I could confirm by a great number of Matters of Fact, of which I have been a Witness. Now to know whether the Moon is the cause of this difference or no, is not the thing I trouble my self about; 'tis sufficient that the Observation is true. The rest is but an unprofitable Examination, which is of no use in the cure of Diseases.

The Worms against which we have prescrib'd Remedies, may be look'd upon as Domestic Enemies; from which we cannot be too vigilant in preserving our selves. But there are others which are Friends to Man, and which denote the goodness of his Temper.

Hitherto we have spoken of the First, that is to say, of those that are hurtful to the Body: Order now requires, that we should discourse of the latter; that is to say, of those wherein there is no harm at all. I call 'em *Spermatic Worms*, because they are found in the Spermatic Humour of all Creatures. I could not forbear saying something of these Worms in the third Chapter,

Cautions to be observ'd.

ter, when I gave an account of the several Differences or Species of Worms. But in regard I could not there enlarge my self without deviating from my Design, which was then to speak of Worms that are prejudicial to the Health, I was oblig'd to refer this Matter to the following Chapter.

CHAP.

C H A P. XI.

Of Spermatic Worms.

THE Worms of the Body are distinguished into *Flesh-eaters* and *Spermatics*. The first are those which devour the Creature, and against which we have prescribed Remedies. The second are found in the Spermatic Vessels of Creatures, and which do 'em no harm; and of these it remains for us to discourse. Mr. *Hartsoeker*, and after him Mr. *Leuwenhoek* affirm, that these Worms are in Men, and in all Creatures, as the Seeds are in Plants. In case they be so, which we shall afterwards examine, the name of *Worms* is but improperly given 'em. A Man would think I might have pass'd by these Worms in silence, since they have nothing in common with other Worms. But in regard I proposed to myself to treat in general of all Animals that are bred in the Body, I should not compleat my Design if I omitted these.

In all Male Animals you shall observe, by the help of a Microscope, in that Humour which is contained in their Testicles, and in the other parts of Generation, an incredible number of little Worms, which for that

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reason

178 *Of Spermatic Worms.*

reason I call *Spermatic Worms*.

1. These little Worms are never perceived there, but at the Age which is proper for Generation. They are never seen neither in Children nor old Men.

2. You find them languishing, and for the most part dead in *Gonorrhæa's*, and in Venereal Distempers.

3. There is not one, or at least not any living in those that are Impotent.

4. They are not to be found in the *Ovaries*, or in the Eggs of Females.

5. The Spermatic Worms in a Man have a head much bigger than the Spermatic Worms in other Creatures. Which agrees with the Figure of the *Fætus*, or humane Birth, which when it is little, seems to be no more than a great Head upon a long Body, that seems to end in a kind of a Tail.

6. Presently after the mixture of the Sexes, the Matrix of the Female is all full of Spermatic Worms, whereas before it had none. Several days after you shall discover 'em alive, but after a certain time they are no more to be seen.

7. The whiteness of the Spermatic Humour proceeds from the innumerable multitude of little Worms that are in that Humour; for the less Worms there are in it, the less white it appears.

8. The Flesh-eating Worms are bred in the greatest part of violent Fevers; on the other side,

side, the Spermatic Worms for the most part die at that time.

9. They who commit the greatest Excesses against Continency, generally have no Spermatic Worms.

These things being duly consider'd, leave no room for a Man to doubt of the manner how Generation is performed. They are upheld by Experience; and they who have a mind to confirm their belief, need no more than do as follows.

If you open a living Cock, that for some days has been kept from the Hens, and with a Microscope examine the Humour contain'd in the Testicles, and other parts of Generation, you shall find in that Humour, if you take but as much as a grain of Sand, above fifty thousand living Animals resembling Eels, and all in continual motion. That you may the better succeed in your Experiment, you must first open the Jugular Vein of the Cock, that you may not be hindered by the abundance of Blood.

If you cut up a Dog, and after you have taken off one Testicle, by the help of a Microscope examine the Humour that comes out of the *deferent Vessel*, you shall discover in it such a hideous number of little Worms, that you shall hardly be able to believe your own Eyes. Afterwards dissect the *deferent Vessel*, you shall find therein so great a number of Worms, that in a small quantity of it, no
N 2 bigger

bigger than a grain of Dust, you shall see above a million. In regard this Experiment cannot be made unless you mingle some drops of Blood with the Humour which you examine, you shall perceive among those Worms little Globes, which are the parts of the Blood, for they are so shap'd.

Dissect the *Epididymes*, or the *Parastata*, and you shall find therein the same quantity of Worms: these Worms have a long Tail, and a Body compos'd of several Roundnesses one above another, * see at the end of this Book the Figure 12. When they are dead, they have another Figure, as thus; see the Figure 13.

The Milts of a Codfish are all full of Spermatic Worms. Separate one Particle of 'em but as big as the point of a Needle, examine that Particle with a Microscope, you shall see above ten thousand Animals all with long Tails, and living. Moreover, if a hundred of these small Particles, set one by another, make but a Thumb's breadth at most, it follows from thence, by a just Calculation, that in one of these Milts, which are fifteen Thumbs in length, there are above a hundred and fifty millions of Animals; that is to say, more than there are Men upon the Earth.

Leuwenhoek, to whom we are beholden for these Discoverys, says, That he took out

* See *Leuwenhoek*, Part 3. p. 161.

the Belly of a Dormouse, and having separated the Testicles from the *deferent Vessels*, he saw in the Liquor contain'd in those Vessels, an immense number of living Animals resembling Eels, of which he gives the Figure; see Figure 14. He broke several strings of the Testicles, and observ'd the Matter of which the Strings were compos'd, with great nicety, and found 'em full of a chrystalline oily Humour, compos'd of several irregular Parts, and an infinite number of these Worms; some of which were wound or folded one upon another. Some appeared not to be full grown, and not yet to be come to Life. He adds, that those Spermatic Worms were so small, that they did not take up the space of the smallest Thred of those Testicles. He made the same Experiment several times, and still discovered the same thing.

If you open a dead Man presently, or an Offender that has been executed, you shall discover in the Humour of the Testicles, and in that of the *deferent Vessels*, an innumerable train of living Animals, having a great Head and a long Tail. I said, that these Worms were not perceived till the Age proper for Generation. To be convinc'd of which, there needs no more but to examine the Testicles of a Cock Chick, and you shall not find a Worm. You may do the same thing in a young Whelp, where you shall not find so much as one of those Animals.

If you open an Infant newly deceas'd, you shall not find a Worm either alive or dead, whereas in a Man you shall find millions. They appear languishing, and more frequently dead in *Gonorrhæa's*. This is seen, if you open Persons that come to a violent Death, and have got the Venereal Distemper. 'Tis also to be seen, if you examine the Humour that issueth forth in the *Gonorrhæa*.

They are not found in the *Ovaries* or Eggs of Females; of which you may be convinc'd if you open Women that come to violent Ends.

After the mixture of Sexes, the bottom of the Matrix, and Tunicles of the Matrix, are all full of Worms, whereas before there be none. To demonstrate this, we need but open a Bitch immediately after she hath been covered, for then millions of those Worms may be found in the Matrix. Such as please to make those Experiments, will be astonish'd at the sight of those prodigious numbers of Worms: Whereas if that Animal be opened before she be cover'd, there are none to be seen at all. Those Worms are still more easily discovered in a few a little after she hath been covered.

What are we to conclude from thence, if it be not that those Spermatic Worms are the occasion of the Generation of all Animals? These Worms are not found before the Age proper for Generation. They are found dead

or dying in old Men, and in those who have *Gonorrhæa's*, or Venereal Distempers. There are none in the Matrix before the Communication of Sexes. What must we infer from those Circumstances? Does not the thing seem to speak of it self, and to tell us plainly that Man, and all other Animals, come of a Worm; That that Worm is the Epitome of the Animal that is to come of it; that if the Worm be Male, it produces a Male; and if it be Female, it produces a Female; that when it is in the Matrix, there it takes its growth by means of an Egg into which it enters, and where it stays the time appointed by Nature; when it is grown to a certain measure, it forces the Membranes of that Egg, and then is born?

There needs no great Effort of understanding to be satisfy'd of all this; there needs no more but to see the Experiments we have just now mentioned. But how does this Worm get into the Egg? How above all, amongst so many Worms that enter into the Matrix, is there but one ordinarily that becomes a *Fetus*? That's no way difficult to comprehend, according to the System which I am about to lay down. It will be seen that it can scarcely be otherwise.

There's no necessity of declaring with *Leuwenhoeck* against the Doctrine of the *Ovarium*, and Eggs, and to say that there is not ordinarily in the Matrix any more than one

Point which is proper to entertain and nourish the Spermatic Worm: so that of all those Worms, none but that which happens to meet with that Point grows and becomes a *Fetus*, and that the rest die for want of Nourishment, like Corn that does not fall upon good Ground. It's more natural to allow the System of Eggs, and only to grant them another use, which is first to receive, and afterwards to inclose and nourish the Worm. The Matter may be understood thus: When the Egg comes down from the *Ovarium*, and falls into the Matrix, these Spermatic Worms, which are all of them in a continual motion, go thro all the Cavity of the Matrix; they meet with this Egg, go round it and over it, and the place by which the Egg breaks off from the *Ovarium*, resembles that by which the Fruit breaks off from the Stalk, that is to say, that place leaves a small opening; now it is easy to comprehend, that amongst so many Worms, it is not possible but some of them should enter the Egg by this Opening. Then the Cavity of the Egg being little, and proportion'd to the bulk of the Worm, which cannot bend to return back, 'tis obliged to continue shut up in the Egg, where in the meantime no other Worm can enter, because of the smallness of the place possess'd. A Friend of mine, a Physician of the Faculty of *Paris*, a Man of extraordinary skill in Physic, of whom I have already made mention *Cap.*

3. *Article 2.* is of opinion, that at the opening of the Egg there is a *Valvula*, which suffers the Worm to enter the Egg, but hinders it to come out, because in the inside it shuts upon the outside. This *Valvula* is held fast by the Tail of the Worm which lies against it, so that it cannot open then neither without nor within. This is the cause that no other Worm can enter there, and this opinion seems very probable. If several Eggs fall into the Matrix, a Worm enters each Egg, and then a Woman becomes with Child of several Children; those Children having each their Egg, must by consequence have their several Inclosures, as Experience shews us.

The Woman is not always with Child the first day of her Conception. By Conception I understand the first Action, by which the Spermatic Humour is retain'd in the Matrix, after the Egg hath fallen into it. The Matrix then shuts it self exactly, as every one knows, and the Matter that is entred cannot get out again; this is what occasions Conception. Her being with Child, or growing big, happens when the Worm has entred the Egg, for then it grows there, and becomes a *Fetus*. It does not always enter as soon as the Woman conceives; sometimes several days pass before that happens, and this is the cause that Women mistake so often when they judg of the time of their being with Child, because they never reckon but from the day on which they reckon

reckon they conceiv'd. It may so happen that those Worms stay several weeks in the Matrix before one of them enter the Egg, for they don't die soon. If you put up in a Viol the spermatic Humor of a Dog, and stop the Viol well, you shall find of them alive more than seven days after, and some of them to have as much motion as on the first day. Then seeing the Matrix is much more proper to preserve these Animals than a close Viol can be, they may be preserved there, in considerable numbers, for several weeks, and one of them at last may enter the Egg, if no other be entered before it. Hence it may happen that a Woman, whose Husband dies some days after her having conceiv'd by him, may not be brought to Bed till the 11th, 12th, or 13th month after, because perhaps the Worm does not enter the Egg till a month, two months, or perhaps three months after the Conception. I confess that the case is difficult, because the number of Spermatic Worms is too great, for none of them to enter in so long time. Besides, it can scarce happen that these Worms should live so many days in the Matrix alone; but tho' it be difficult, it is not impossible. So that we have sometimes seen Women thus brought to Bed without being criminal.

When the Spermatic Worm is entered the Egg, there it becomes a *Fetus*, that is to say, there it is fomented and nourish'd, its parts increase, and they unfold themselves insensibly;

and

and when they have attain'd to that bigness which they ought to have in the Egg, the Animal breaks Prison, and is born as we have already said.

The Spermatic Worms have all of them long Tails, but those disappear when they become a *Fetus*; just like the little Frogs which at first are only a Head and Tail, but at last they lose that Tail when they begin to take the sensible Form of Frogs.

We must not conclude from this System, that the Spermatic Humour of Dogs includes little Dogs, that that of Cocks contains little Pullets, or that of Men little Children. This Opinion is unjustly ascribed to *Leuwenhoeck*, in a Book intituled, *Collectanea Medico-Physica Centur. 5. p. 8*: from which that Author defends himself very well. In effect, as he truly observes, as we cannot say that the little Animals which the Microscope discovers, almost in all Waters, are Flies and Butterflies, tho they become such in time; nor that the Seed of a Pear is a Pear-tree, because a Pear-tree must issue from it: In like manner we ought not to say that the Spermatic Worms which are still in the Body of Man, are little Children, tho they are to become such as soon as they are entred the Matrix, or rather the Egg contained in the Matrix.

I foresee here what will be the thought of most Readers; methinks I hear them say, that 'tis an unconceivable thing, that in a Man, for Example,

Example, such a small Worm, if it be not an Infant, at least is the Compendium of an Infant; and that that which we call the formation of the *Fetus*, should be no other than a mere unfolding and augmentation of the parts: that for this end we must suppose an infinite number of organical Parts in the Worm, and say by consequence that these Parts are infinitely small: that besides, according to this System, we must necessarily suppose that the Spermatic Worm not only includes the Compendium of the Animal which is to be born, but that it also includes the Abridgment of all those that are to be born of this Animal; and not only the Abridgment of all those, but likewise of all the rest that are to come of the Line of that: which appears impossible, because of the smallness which these little organiz'd Bodys may have, so small that it can neither be imagin'd nor comprehended; and which therefore ought to make us reject the System that is attended by such a Consequence.

I answer to this, That if this Littleness can neither be imagin'd nor comprehended, it's impossible nevertheless but this littleness, how unconceivable soever it be, must necessarily be admitted, and for this I appeal to the Testimony of the Eyes. The Spermatic Worms are above a thousand times less than a grain of Sand, which is almost invisible. We are convinc'd of this by our eyes, since they shew us
above

above fifty thousand in a Portion of Matter, which is not so large as a Grain of Sand, as we have observ'd in speaking of that which is to be seen in the Spermatic Humour of a Cock or Dog, and other Animals. Then let's conceive, if we can, what a Grain of Sand is, divided into fifty thousand parts; but we will not say so many, let's content our selves to say one thousand parts, because we would frighten no body: We must admit then that there are Animals a thousand times less than a Grain of Dust, which we can scarcely see. This is not enough: those Animals a thousand times less than a Grain of Dust, have a motion like other Animals; they have Muscles then to move, Tendons, and an infinite number of Fibres in each Muscle; and in fine, Blood or Animal Spirits, very subtile and fine, to fill or move those Muscles, without which they could not transport their Bodies into different places. We must then admit Parts less than those Animals. Our Imagination loses it self in this thought, it is amaz'd at such a strange littleness; but to what purpose should it deny it? Reason convinces us of the existence of that which we cannot conceive.

That which occasions our Error in this, is, that our View being bounded, we think Extent is so also; whereas on the contrary, Extent is infinite in one sense, and a little part of Matter which conceals it self from our Eye, is capable, as says the Author of the *Search after Truth*,

Truth, to contain a World, in which there may be found as many things, tho much less in proportion than in the World wherein we live. All the Animals have other Animals which devour them, and which to them perhaps are invisible : so that what an *Acarus* is in respect of us, those Animals are in respect of an *Acarus*; and perhaps as the same Author says well, there are in Nature lesser and lesser, *in infinitum*, in this so strange proportion of a Man to an *Acarus*. We have evident Demonstrations of the divisibility of Matter *in infinitum*, and that is sufficient to make us comprehend that there may be Animals lesser and lesser *in infinitum*.

After all, Is there any Portion of Matter, whose smallness can bound the Power of God in the formation of those little Animals, more than in any other thing?

Experience hath already undeceiv'd us in part, by shewing us Animals a thousand times less than a Wax-worm; then why should we think that they are the last and the least of all, as that Philosopher still says so well?

It does not then appear unreasonable to think that in one Spermatic Worm alone there's an infinite number of organiz'd Bodys proper to produce an infinite number of Animals; so that according to this thought, which cannot appear extravagant to any but those who measure the Wonders of the infinite Power of God according to *Ideas* of their own sense and imagination,

gination, we may say that in one only Spermatic Worm there may be organiz'd Bodys proper to bring forth *Fetus's* and Infants for an infinite number of Ages, always in proportion from lesser to lesser.

Nature does nothing but unfold those little organiz'd Bodys; she gives a sensible increase to that which is out of the Seed, and likewise an insensible increase, but yet real, and proportion'd to their size, to those that are still included in the Seed.

We find in the Sperm of a fresh Egg that hath not been hatch'd, a Pullet that is perhaps entirely formed. We find Frogs in the Eggs of Frogs, and we should without doubt see other Animals in their Sperm if we had dexterity and experience enough to discover 'em; there is then an appearance, that all the Bodys of Animals, that have been born since the beginning of the World, or that shall be born to the Consummation of Ages, were created in the first individual Male of each Species. We might carry this thought further, were we not afraid, with the Author of the *Sacrosanct Truth*, to dive too far into the Works of God.

Let us hold by this great Principle; That nothing is great nor little in it self; that it is only so in respect of our Body; and thus it does not follow that it is so absolutely, since our Body is not a certain measure by which we must judg of what ought to be the Extent of other

other Bodys. We are our selves very little in respect of the Earth, still less in respect of the Space contained betwixt us and the fixed Stars, still less and less *in infinitum* in respect of the immense Spaces which we may still imagine greater and greater *in infinitum*.

God might have created Men, in respect of whom we should not have been the thousandth part of a Wax-worm. He might have also made others, in respect of whom those might also have been little. What should we then have been in respect of the greatest? perhaps they would have look'd for us with Microscopes, and should not have found us. Our littleness should have been incomprehensible to them; and if some Philosophers amongst them would have assur'd them of our Existence, they would, without doubt, have look'd upon their Discourses as fine Fictions. Let us put our selves in the place of those Men; let's consider how much we should be in the wrong, not to comprehend that there should be Men so little in respect of what we should be; and let us consider that no littleness, how unconceivable soever, ought to occasion the least scruple in us; and if there be no other difficulty in the System which we have just now propos'd, nothing ought to hinder our embracing it.

C H A P. XII.

Aphorisms concerning Worms in Humane Bodys.

I Thought my self oblig'd to conclude this Treatise with Maxims that should, as it were, make up the general Recapitulation of it, and whereof some might serve to illustrate; and to be a Supplement to the Work. These Maxims are short, and sometimes express'd in half a word. It's necessary, to the right understanding of them, to have read all the other Chapters.

SECTION I.

I. THE Animals which we call *Worms*; are little Insects.

II. The other Insects are called *Great Insects*.

III. Insects are so call'd, because their Bodies are mark'd with Infections, or, to speak more properly, Incisions.

IV. A Worm is a complete Animal, and as complete as any other Animal in Nature.

V. The Worm breaths, and hath Lungs.

VI. All Worms, how little soever they be, have Blood.

- VII. Most Worms have several Hearts and Lungs.
- VIII. The number of Hearts and Lungs in some Worms, is sometimes the cause why those Insects, tho divided, shew signs of Life so long time after.
- IX. Worms, as all other Animals, come from Seed, which contains them in little.
- X. The Eggs of Worms enter our Bodies with the Air, and our Food, and oftentimes into our Flesh by the outside.
- XI. When the Eggs of Worms are entred in our Bodys, the Worms shut up in those Eggs, breed, provided they find in us a proper Matter for making them breed.
- XII. It is with the Eggs of Worms, as with the Seeds of Plants, which don't grow in all sorts of Ground.
- XIII. Since Worms are engendred of Seed, it's impossible there should be any new Species of them.
- XIV. Most of the Worms that breed in the rotten Carcase of a dead Animal, were there in the Egg when the Animal was alive.
- XV. Oats don't cease to bud forth after they are in the Horse's Belly. The Eggs of Worms which the Animal hath swallowed, bring forth their Worms in the same manner after the death of the Animal.
- XVI. The Air is full of the Seed of Worms, as are also Rain, Water, Vinegar, sour Wine, stale Beer, Cider, and sour Milk.
- XVII.

XVII. All the parts of the Body are subject to Worms, none excepted.

XVIII. The Blood and Urin are sometimes full of them.

XIX. The Urin and Blood of those who have the small Pox, has Worms in it.

XX. The Pustules of the small Pox are full of Worms.

XXI. The more Worms there are in the Pustules of the small Pox, the more they mark.

XXII. One good way to hinder the small Pox from marking, is to wash the Face with some Water that kills the Worms.

XXIII. If in the beginning of the small Pox the Patient's Feet be bath'd in warm Milk, all the small Pox fall into the Feet, and the Face is free of 'em; which without doubt is occasion'd by this, that the Worms which make the Scabs or Pustules of the small Pox run to the Milk.

XXIV. In the Venereal Distempers there's no part almost of the Body which is not gnaw'd with little imperceptible Worms; and it is those Worms that occasion most of the Ravages that happen in those sorts of Distempers.

XXV. In the *Fistula Lacrymalis*, the Water which comes from the Eyes, is full of little Worms that are discerned by a Microscope.

XXVI. A Physician ought carefully to examine with a Microscope, the Blood that he

orders to be taken from his Patient, to see if there be any Worms in it, because there are abundance of Prognostics to be drawn from thence.

SECT. II.

I. **W**ORMS are distinguish'd into Intestinal and Un-intestinal Worms.

The first are those that breed in the Guts, the other are those that breed in any other part of the Body.

II. The Intestinal Worms are of three sorts, the * *Strongli*, the *Ascarides*, and the *Tania*. The *Strongli* are round and long, the *Ascarides* round and short, and the *Tania* long and flat.

III. The *Tania* is of two sorts: there's the *Tania* properly so called, which hath no motion or form'd Head; and the *Solium*, or Solitary Worm, which hath a Head and Motion.

IV. The *Strongli* occasion most Distempers; there are of them ordinarily in Malignant Fevers; sometimes they occasion Dumbness, and dry up Nurses Milk.

V. The *Ascarides* frequently occasion the *Tenesmus*, and Swoonings: Those who have *Ascarides*, are tormented with the Head-ach, and afterwards become deaf and drou-

* From the Greek *στρογγύλη*, that signifies round and long.

fy, and are in danger of an Impoftume in one of their Ears.

VI. The Worm call'd *Solium*, breeds in Man in his Mother's Womb; it often causes Epilepsies, sometimes Plurifies, and ordinarily pains of the Liver.

VII. The Worm *Solium* is of an excessive length, ordinarily four or five Ells long, and sometimes much more.

VIII. Those who accuse *Pliny* of speaking largely, when he says that he hath seen *Tania's* above thirty foot long, are People of very little Knowledg or Experience.

IX. The *Solium* is always alone, without any other of its Species, in the Body of Man; nor does it re-ingender when once it comes out.

X. The *Solium* never comes away almost without taking Medicines, it grows old as the Patient does; the ordinary Medicines against Worms are of no use against this: it's only one Worm, and not several join'd together.

XI. Exentral Worms breed in the Head, Ears, Nose, Liver, Heart, &c. and occasion great Distempers.

XII. The great pains in the Teeth are not occasion'd by Worms.

XIII. Heart-Worms frequently occasion sudden Death.

XIV. The Worms that breed in the Blood, don't hinder its being of a lively red Colour.

XV. The Skin-worms sometimes dig under the Skin, as Moles do under Ground; and as the Moles are discover'd by the Ground they dig up, those Worms are sometimes known by a sort of Cords which they raise above the Skin, which resemble the Embroidery we see on Melons. Those Cords reach very deep, and are taken up with the point of a Needle.

XVI. There be some who have their feet so spoil'd with those Cords that they cannot walk. *Sometime ago I was sent for to a Gentlewoman called Madam Faverole in St. Martins Cloyster, to see a distemper she had in her Feet, which I found to be those Cords that made her Feet look like the Bark of a Melon.*

XVII. Cancers are all full of imperceptible Worms; they gnaw the Fibres of the part, and all the Sieves of the Glands: so that the Glands receiving almost all that offers to them, grow immediatly big beyond measure: afterwards those Worms increasing, and eating what ever they find, they many times ulcerate the Part, and consume it.

XVIII. The Dropsy may sometimes be occasioned by Worms.

XIX. Worms may occasion Tumors and Excrescencies in the Body, as they do in the Leaves of Oak, where by their biting they prevent the Sap of the Leaf from circulating

as

as usual, which occasions that Excrecence upon the Leaf which is called *Gall-nuss*, that some would fallly have to be a Fruit.

XX. The deformitys we are many times born with may happen by Worms, that having gnaw'd the tender parts of the *Fetus*, by this means occasion Tumours or Crookedness.

XXI. Most of the Distempers ascrib'd to Witchcraft proceed from Worms.

XXII. In the Jaundice the Intestines are for the most part attack'd by Worms.

XXIII. The Navel-worms are nothing according to all appearance but the Worms of the Intestines.

XXIV. The Crinones pass for Worms, but it's very probable that they are none.

XXV. The Crinones and Little Dragons are different.

XXVI. The Little Dragon is a true Worm; and neither a swoln Vein, nor an Imposthume.

XXVII. The Doctrine of Acids and Alkalis, ill understood, often hinders the timely giving of purging Medicines which would banish Worms.

S E C T. III.

I. **W**Hatever Distemper Children are troubled with, we ought to suspect Worms. For either they have Worms
O 4 actually,

actually, which occasion and accompany their Indisposition; or they have a Verminous Matter concealed in them, which may produce Worms in time.

II. The *Cucurbitarii* are not to be confounded with the *Tania* or *Solium*.

III. Infants are more subject to Worms than others, and amongst those the Flegmatic more than the Choleric.

IV. When Children put their hands often to their Belly, it's a sign of Worms, particularly if they complain of griping.

V. Children, Men of full Age, old Men, Maids, Women, People of all Ages and Sexes, are subject to Worms.

VI. If any person, without a manifest cause, and without any signs that are usually seen in other Distempers, falls often into Apoplectic Fits; if then their Feet and Hands be cold, and their Pulse very slow, (which alone is a sign of Worms, as well as the Hiccough) there's no doubt but such Persons have Worms.

VII. To lose ones Voice, and to be of a sudden seiz'd with Madness, is another sign of Worms.

VIII. To awake with surprize and alarm, especially in Children, is a certain sign of Worms or the small Pox.

IX. There's a certain sharpness or sourness of breath, that's a sure sign of Worms.

X. To be always hungry, tho one eats a great deal,

deal, is a sign of Worms.

XI. Round and long Worms bite often, and occasion great pain, but broad Worms don't bite at all.

XII. Hollow Eyes, a blewish pale Countenance, and an intermitting Fever are many times the effects and signs of Worms.

XIII. The *Solium* is known by little fragments, like Gourd-seeds found in the Excrements.

XIV. Those parts that resemble the Seed of a Gourd in the Excrements, are the Eggs of the *Solium*.

XV. The *Solium* consumes the purest Chyle.

XVI. The *Solium* occasions sometimes a false appearance of Womens being with Child.

XVII. The Country and Season serve often to confirm the signs of Worms.

XVIII. Three things make our Bodies subject to Worms, bad Air, bad Diet, and excess of good Food.

XIX. Vinegar which kills Earth-worms, does not always kill those of the Body; there be some of the latter sort that live very long in it sometimes.

XX. The Kernels of Pine-Apples are very pernicious when one has Worms.

XXI. Melons cause Indigestions that oftentimes serve to make Worms breed in the Intestines.

XXII.

XXII. Mushrooms are capable of breeding abundance of Worms in the Body.

XXIII. Many times Children are subject to Worms, because they give them Pap too soon, or because that Pap is made of raw Meal which hath not been set upon the Fire or in the Oven.

XXIV. That which breeds most Worms in Children, is the mischievous Custom of denying them as soon as they are born the Milk which Nature hath prepar'd for them in the Breasts of their Mothers, and giving them that of Nurses that have been brought to bed a long time; and whose Milk, by consequence, is more nourishing than it ought to be for newborn Infants.

XXV. The Medicines that are proper to remove the Obstructions of the Liver, are good Preservatives against Worms.

XXVI. Nurses Milk is sometimes full of Worms; to try it, some drops of it ought to be examin'd with a Microscope.

XXVII. When the Nurses Milk is full of Worms, she must be chang'd, otherwise the Infant is expos'd to mortal Diseases.

XXVIII. Most Country-Nurses are subject to Worms, because they eat abundance of Milk and Fruits.

S E C T. IV.

- I. **T**HE voiding of Worms, well considered, serves to make just Prognostics of what there's to fear or hope for the Patient.
- II. When Worms issue, the condition of the Person that voids them ought to be consider'd, the Time of the Distemper, the Place by which they issue, the Excrements in which they are, the Quantity, Colour and Bigness of the Worms, and whether they be dead or alive.
- III. When a Person is in health, and voids Worms, without having taken any thing that may occasion it, it's a good Prognostic.
- IV. The Worms that issue at the Nose come sometimes from the Intestines.
- V. When Worms issue upon the declension of the Distemper, it's a good sign; but if they come away at the beginning of it, it's a bad one.
- VI. If they issue upwards, it's ordinarily because of some Obstruction in the Intestines or in the Gall-passage, or because the Person hath been too long fasting.
- VII. In the beginning or continuance of a Distemper, it's always better that the Worms come away with dejections than alone, unless it be by the Effort of some Medicine.
- VIII.

- VIII. After voiding Worms upwards, if the Person vomit a black Matter like Ink, it is a sign of Death, especially in the beginning of a Distemper.
- IX. When the Excrements voided with Worms are yellowish, it's a good sign; but if they be white, the Patient is in danger.
- X. If the Person be in health, it matters not whether the Worms be dead or alive. In the beginning or height of a Distemper, it's an ill sign if the Worms come away dead.
- XI. It seldom happens that any but flat Worms come away broken.
- XII. When one part of a flat Worm is voided, and the other continues in the Body, there's no danger provided the Head be come away.
- XIII. When Worms come away folded up in Wrappers or Coverings, it's many times a prognostic of a speedy Cure.
- XIV. Those Wrappers in which the Worms be inclosed, are woven by the Worms, as the Spider's Web is woven by the Spider, and as the Cod of a Silk-worm is woven by the Silk-worm.
- XV. The Worms sometimes dissolve all into Water, after being voided; and many times they dissolve in the same manner in the Body.
- XVI. When the Worms are in Slime, and dissolved, it's a good sign.
- XVII.

XVII. The Water of Ice thrown upon Worms that issue from the Body, makes them sometimes dissolve all of a sudden into Water.

XVIII. When Worms come away red, it's a bad sign; the white presage neither good nor bad by their colour. Those that are yellow or livid, presage nothing that's good.

XIX. If the Worms that are voided have others in their Belly, it's usually a sign of Death.

XX. Small Worms are not such an ill Prognostic as the great.

XXI. When a great quantity of Worms is voided, there's cause to fear that some of those Worms have gnaw'd the Guts.

S E C T. V.

I. **M**ANY times such Medicines are made use of against Worms, as are more proper to multiply than kill them.

II. Vinegar is a very bad Medicine against Worms.

III. The Poulder of dried Worms makes abundance of Worms to come away; but for the most part they are such as are bred of it self.

IV. *Mercury* is good against Worms, but it hath dangerous Consequences, nor ought it to be made use of except the Patients be attack'd

tack'd by Venereal Worms.

V. We must avoid making use of Worm-seed against Worms.

VI. Water wherein the green Bark of Nuts hath been steep'd, is of no use against Worms.

VII. If you put into Spirit of Wine live Worms that are come from humane Bodys, they will live in it for some time: They live a long time in the Juice of Limons.

VIII. Malmsey-wine is a sovereign Remedy against the *Encephali* or Head-worms.

IX. The Juice of an Onion, stale Urin mix'd with a little Honey, the Juice of Calamint, a Woman's Milk milk'd into the Ear, are all of them good Remedys against Ear-worms.

X. The Spirit of Salt mix'd with a little Water, is a good Remedy against Worms in the Teeth, as is the Root of Plantane chew'd.

XI. It's a Fable what they talk of Worms that fly away with the smoak of Henbane-seed.

XII. The Juice of Horehound, mix'd with a little Honey, is good against Worms in the Lungs.

XIII. The Pouder of Hoglice is good against Worms in the Liver.

XIV. Garlick, Horse-radish, Cresses, Gentian-roots, Peony-roots, and Myrrh, are sovereign against Heart-worms.

XV.

- XV. The Juice of Chervil is successful against Worms in the Blood.
- XVI. The Vegetable Salt destroys Worms of the Bladder.
- XVII. The Juice of Calamint kills the *Elcophagi*, or Ulcer-worms.
- XVIII. When a Child is subject to the *Cri-nones*, bathe it in warm Water; then rub it with Honey by the fire, and rub it all over afterwards with a coarse Cloth.
- XIX. To wash the Body with the Water or Decoction of Gentian-Roots, is a good Remedy against the *Acari* and Ox-worms.
- XX. The Oil of Olives and of Nuts kills Worms speedily.
- XXI. The Oil of Sweet-Almonds does not kill Worms so speedily as the Oil of Olives, which, no doubt, comes from this, that it is more porous, and by consequence does not so exactly stop up the Passage of the Air.
- XXII. Fasting is bad for them that have Worms in their Intestines.
- XXIII. When we take Medicines against Worms in the Guts, we must intermit from time to time.
- XXIV. The Fern and Bark of the Root of Mulberry-trees, are Specifics against the Solitary Worm.
- XXV. If you put Earth-worms in Vinegar, they die immediately; if you put them in Oil, they don't die so speedily. The Body-
Worms

Worms on the contrary die sooner in Oil, and not so soon in Vinegar; sometimes they live a long time in Vinegar, and are preserv'd there as the Vinegar-worms themselves.

XXVI. The reason why certain Worms that come out of the Body live in Vinegar, is, that most of those Worms feed upon a sharp Matter that is in the Body.

XXVII. The Body-worm, which we call *Centipeda*, or a *hundred Feet*, has no more than the Hög-louse, which in Latin we call *Millepedes*, tho they have but fourteen, that is, seven on a side.

XXVIII. Those who without having been excessive in taking Tobacco, Brandy, or such things, are subject to the Distemper that is commonly called *Vapours*, have, during their Youth, been more subject to Worms than others.

S E C T. VI.

I. **T**HE Spermatic Worms are those that produce all Animals, so that no means ought to be sought to kill them.

II. Impotent Men have no Spermatic Worms, at least live ones.

III. Old Men and Infants have no living ones.

IV. From the Age of Puberty, till old Age, Men have Spermatic Worms.

V. Those that have the Venereal Disease have no Spermatic Worms.

IV.

VI. All Male Animals have Spermatic Worms, Females have none.

VII. The Spermatic Worms enter the Eggs which they find in the Matrix, and there become a *Fetus*.

VIII. By means of the Spermatic Worms, we may conceive how it comes to pass, that a Woman may be brought to Bed beyond the Term of nine Months.

IX. The Spermatic comprehends in short, all the Animals which are to proceed from it.

P

The

The Conclusion of the Work.

THIS is what I propos'd to my self to write concerning the Worms that are bred in Humane Bodies. I could have given an Account of abundance of Med'cines that lie scattered up and down in Physic Books, and have fill'd this Treatise with different Receipts, which I have not done: For I thought it better to mention but a few, and those good, than to amass together a heap of Receipts, which would have made the Book bigger, without making it better. Besides, as Mr. *Hecquet* observes well in a Thesis, that we cannot read too much*; it's not the quantity of the Remedies that makes the Medicine rich; the goodness of the Choice is preferable to the abundance of Materials. The wise simplicity of *Hippocrates* cannot be enough commended, who with a small number of Med'cines which he knew thoroughly, never deceiv'd the Expectation of his Patients, nor

* An Remediorum curta suppellex? A Thesis maintain'd under the Presidentship of Mr. *Hecquet*, in the Physic Schools at Paris, Feb. 6. 1698.

ever was deceiv'd by the Accidents of the Distempers †.

The Medicines I have exhibited are sure, and the knowledg I have of their Virtue is not the Effect of my Reasoning, but of my Observation; so that I hope those who practise them will find them successful. I say, that this Knowledg is not the Fruit of my Reason, because in reality it is not; and further, to take the thing right, it cannot be so, for in the Matter of Medicines we have no other way to follow, but that of Observation: for to offer to discover, by Reason alone, the Virtue of Medicaments, is the way never to find what we seek for. Let us then apply our selves to Experience, and leave those Tricks and vain Subtilties, which, according to *Quintilian*, make us like those little Insects that are never pleas'd but when they are amongst Thorns *. Let's shake off this School Physic, which is good for nothing but wrangling; and let us attain a Positive Physic, which may be of use to us in practice. By a Positive Physic

† Interea abunde nobis erit aurea divini senis simplicitas. Illius amamus pauperiem, qui parvo contentus, nec laborantium vota fallere, nec morborum insidiis falli potuit. Illius adeuntes fortunam, curæ rerum potius insistimus quam copiz. *In eadem Thesi ad calcem.*

* Reperias quosdam in disputando mirè callidos, cum ab illa Cavillatione discesserint non magis sufficere in aliquo graviore actu, quam parva quadam Animalia quæ in angustiis mobilia in Campoprehenduntur. *Quint. Instit. Orator. lib. 12. cap. 1.*

I don't mean one made up of Authoritys, which consists in knowing the Sentiments of divers Authors upon a Point, as in Positive Divinity ; I mean one that consists of positive Matters of Fact, which teaches us what hath been ofteneft successful in the same Circumstances ; and I say that that Positive Physic, regulated by Method, is the true Physic.

School Physic enables us to make Repartees, to come off handsomely in a Point of Controversy ; and the other makes us sensible and prudent, so as to order nothing but what's convenient : the one makes us headstrong and opinionative, and the other makes us honest Physicians, who seek for nothing but how to inform our selves, and to be useful. The one minds nothing but making Systems, and the other studys principally how to regulate his Conduct : The one seeks for Evasions how to defend himself, and the other for Medicines to cure Distempers : The one consults his Ideas, and the other consults his Reason and Experience : The one makes Pedants, and the other Physicians.

*A Letter from M. Nicholas Hartsoeker,
Writ from Amsterdam to the Author
upon the Subject of Worms.*

S I R,

“ **T**HE Worm of which you sent me
“ the Cut, must certainly be less fre-
“ quent with you than in this Climate; for I
“ know several Persons here who have la-
“ boured under that Distemper, and voided
“ Worms of a prodigious length, and like
“ unto yours. Mr. *Tulp*, formerly a very
“ famous Physician here, makes mention of
“ ’em in his Observations. A Physician of
“ my Acquaintance brought away one from
“ a Man about fifteen days ago, which ex-
“ ceeds yours in length. But Mr. *Ruisch*, Pro-
“ fessor of Anatomy in this City of *Amster-*
“ *dam*, hath shewed me two, one of ’em a-
“ bove fourscore of this Country Ells, that is
“ above forty five *French* Ells; which I could
“ scarcely have believed had I not seen it, for
“ this passes all belief: and to tell you the
“ truth, Sir, this hath extremely broke the
“ order of that Thought I always had as to
“ this Matter, and which yet I cannot reject,
“ that there’s nothing has Life, be it Animal

“ or Plant, but what comes from Seed ; and that
“ nothing is ever ingendered of Corruption :
“ for if that Thought be true, where do we
“ see upon the Earth, Worms of this Species,
“ and of such an excessive length ? It is in
“ vain to say, that the plenty of Aliment they
“ find in our Bowels, where they have taken
“ up their abode, makes them to change their
“ form, and grow so excessive long : that does
“ not satisfy. It might be suppos’d that this
“ Worm, since it is less common with you,
“ and more ordinary in this watry marshy
“ Country, stays at the bottom of the Wa-
“ ter deep in the Slime ; and that so it may
“ happen, that People swallow its Eggs
“ by drinking or otherwise. But if that were
“ so, would not they sometimes have been
“ found in the Slime and Mire ? For my
“ part, Sir, I believe they are created with
“ Men, and that their Species is perhaps as
“ antient as Mankind ; as well as that sort of
“ Louse which is only found upon Man, and
“ whose Species would certainly be lost, if
“ that of Men should once fail. I am of O-
“ pinion, that those Worms ingender by
“ Male and Female in the Bowels ; and that
“ some of their Eggs coming to issue with
“ the Excrements, and to fall upon some
“ Herb or other thing, are swallowed by a-
“ nother, in whose Intrals the Worms con-
“ tain’d in those Eggs come forth and are fed.
“ We find Insects every where, of which
“ there

" there be some that are found only in one
 " Animal where they feed; and others are
 " found upon several, as the Flea, which is
 " found both upon Dogs and Men, and other
 " Creatures. Sometimes millions of Worms
 " are found in Muskles. The Spawn of Cod-
 " fish is full of 'em. There be Worms in all
 " the parts of a Man's Body, even in the
 " *Glandula Pinealis*, if what I am told of it be
 " true. In fine, it would seem that all Ani-
 " mals were made to serve for Food to one
 " another; the great ones eat the little ones,
 " and are eat up by them. I hope in a lit-
 " tle time to have the honour of discoursing
 " you more at large upon this Subject, and to
 " assure you that I am, with respect,

S I R,

Your most humble,

and most obedient Servant,

Nicholas H. rtsoeker.

*A Second Letter from Mr. Hartfoeker to
the Author.*

S I R,

I Believe that every thing which is bitter
and purging, is good to make People
void Worms; so that Rhubarb alone may
be used for that end with success. When it
is given Children to chew, they say it is to
fortify the Stomach; but I am of opinion
that it serves only to kill the Worms that
are found there. Sweet Mercury may be
also administered successfully, for it is not a
Poison strong enough to kill the Patient, yet
it is strong enough to kill the Worms, if
they swallow but a little of it. My Child
being dangerously ill, and without hope of
cure, I gave it some Grains of Emetic Tar-
tar; which the first day seem'd to have no
effect, but next day she voided three great
dead Worms, and was immediately cur'd.
To tell you my thoughts, Sir, I believe that
Worms occasion most Diseases with which
Mankind is attack'd; and likewise that
those who have the Distempers that are cal-
led *Veneral*, nourish in their Bodies an infi-
nite number of invisible Insects, who gnaw
and devour every thing that comes in their
way,

“ way, and occasion all the Disorders that
 “ are known to attend that Distemper; so that
 “ they cannot well be destroy’d but by Mer-
 “ cury, which in our Body becomes a Poison
 “ that kills them. Mr. *Ruisch* could not tell
 “ me any particulars of the Worm of which
 “ I wrote to you, that deserve your know-
 “ ledg; but he hath offer’d me a piece of it,
 “ which I have sent you, that you may see if it
 “ be like yours. I am, with all imaginable
 “ zeal and passion,

S I R,

Amst. June 11.

Your most humble and most

1699.

obedient Servant,

Nicholas Hartsoeker.

I said in the sixth Chapter, that tho Tobacco may be good against Worms, when taken often; we must nevertheless avoid that Medicine, because the frequent use of it is dangerous to the Health. The Reasons that I brought to shew that Danger, are taken from the Learned Thesis, which his Majesty's Physician in Chief ordered to be maintain'd upon Tobacco. I concluded it would oblige the Reader to exhibit that Thesis here.

*

A

A QUESTION debated March 26. 1699.
 in the Physic Schools at Paris, under the
 Presidentship of Mr. Fagon, Counsellor
 to the King in all his Councils of State, and
 Physician in Chief to his Majesty; viz.
 Whether the frequent use of Tobacco
 shortens the Life.

Translated from the Latin.

TO enable us to make a just Judgment of
 the Effects that Tobacco may produce,
 we must have a perfect Knowledge of Anatomy.
 This Knowledge is so necessary in all Physic,
 that if the first Foundation be not laid in
 that Art, it's in vain for any Man to pre-
 tend to the Conservation of a human Body.
 But we must not confound the true Anatomy
 with that which was known in the time of
Galen, nor by consequence applaud our
 selves, that we know the Figure, Colour, and
 Situation of the principal Bowels; the Ten-
 dons, and fleshy lump of the Muscles. For
 this were scarcely to know any thing more
 than those whose servile Profession obliges
 them to know in general the parts of Animals,
 so as to distinguish those that are to be sold
 dearest,

dearest, or which are most proper for the finest
Meds.

A Physician ought to discover in a Body, that which is most conceal'd : he must enquire into the first Principles that compose the Intestines ; he must with his Stillet, and the finest of Instruments, dilate the smallest Vessels ; that in an almost infinite number of Glands that are scarcely visible, he may be able to distinguish the different Sieves by which they filter the Juices that they receive. He must trace the smallest threds of the Nerves, that the distribution which is made of 'em to the different Parts of the Body, may teach him the Correspondence of the Organs with one another ; that with the utmost application he may observe the finest contexture of the Muscles ; that with the help of the Microscope he observe the Springs, the Arches, the Spirals, the little Cells form'd by the smallest Fibres ; and that by the fragility and fineness of all those parts he know how to judg of what is capable to break or preserve them, and by consequence to weaken or fortify the Health, or lengthen and shorten the Life.

When we are arriv'd to this Length, we easily discover the Effects which things that enter the Body may produce in it : We perceive the Order or Disorder, that Wine, Brandy, Opium, Tobacco may occasion in it ; but we judg with much more solidity when we don't content our selves with the dissecting only of
dead

dead Carcasses, but pass to those of Animals that are alive: for otherwise we can scarcely learn any thing but the structure and situation of the solid Parts, and that is not enough to give us a perfect knowledge of what passes in a humane Body. We must then, in order to judg well of every thing that may ruin or maintain Life, search into the Intrals of living Animals, and there see how the Body is maintain'd in its Function by the Harmony, and at the same time by the disagreement of fluid and solid Parts, of which the living Machine is compos'd. We must there have observ'd how the Fluids make a continual Effort against the solid Parts which contain them, as the solid Parts make a continual resistance to the current of the Fluids which jostle them; and so as nothing can be more contrary to Health, and long Life, than that which is capable of slackening too much the Motion of the Fluids, or to augment it beyond measure: from thence we may perceive what there is to be fear'd or hop'd for from the frequent use of Tobacco.

But in order to draw from Anatomy all the Assistance necessary, not only in that which relates to that Question, - but likewise in that which concerns all others in Physic, we must consider, without prejudice, all that happens in an Animate Body, listen to no other Interpreter in Nature but Nature it self, and not prefer the Testimony of the Antients to that
of

of our Eyes. Much less ought we to neglect the study of the Truth, and expose our selves to be seduc'd by the empty discourses of those, who, for want of Honesty or Knowledge, dare not in their old Age forsake the Errors they imbib'd in their Youth; and who, to maintain the Reputation of their false Opinions, continually cry out, that it is a Crime to vary in the least from the Doctrine of the Antients. Who is it that does not see that such a blind respect to Antiquity is nothing but a Mask under which they conceal their Laziness and Ignorance? They profess to follow the Antients, but do they follow those Maxims of Probity which their first Masters left them? Do they regulate themselves according to the Manners of those great Men? Will they say, for example, that the noble Spirit of *Hippocrates*, the disinterestedness which he so much commends, is in esteem amongst those, from whom a base and sordid covetousness takes away all sense of Honour, so far as to prevail with them to make use of Fraud to supplant those whose Merit gives them cause of jealousy, and then to seize upon their spoils? While they're so zealous in appearance for the antient Opinions, are they the more docile in the Maxims of Decency, which the Antients observ'd so religiously? Do they observe that Gravity and Modesty for which *Hippocrates* was so commendable? Are not they the first that exceed in the use of Tobacco, and may it
not

not be said that they seek to authorize this abuse by their Examples?

They who by a serene Air, by a sweet and peaceable Mien, ought to animate the confidence of those who imploy them, they are not ashamed to appear before them with their Faces all cover'd with Snuff, upon which there's nothing to be seen but those hideous Draughts which that Poudre hath drawn there. When they visit their Patients, they are more taken up with their Tobacco-box, or Snuff-box, than with enquiring into the dangerous Symptoms of the sick Person, which determine no less than their Life or Death; and they are no ways ashamed to be seen thus quite drunk with a Vapour, in which they continually breath; and discharge themselves of a Function so slightly, to which all the Application that a Man can make use of is scarcely sufficient.

II.

As we must not be bigotted in favour of the Antients, neither must we refuse them our Esteem. It is true, they were ignorant of many things which our more happy Age hath discovered; but on the other hand, we are oblig'd to them for many things of which they were the first Discoverers: Besides, they sought out the Truth by themselves, and that with so much honesty, as of it self alone is sufficient to recommend 'em to us. To what degree of perfection, think we, would not those
great

great Men carry their first Discoveries, if they could be born again in the midst of so many helps which they wanted? What Amendments would they not make in their Writings, if they should illustrate them with Commentaries? What Errors and Obscurities would they throw off, to give way to Truth and Evidence? They would certainly banish from the Temple of *Æsculapius*, those Idols of Qualities and Faculties, so frequently and to no purpose invoc'd against Ignorance. They would not lose any more time to examine, as it were with the Ballance in their hand, the several mixtures of Elements. They would not own any other Causes of Life, and of the Functions of the Animal, than those which are deriv'd from the marvellous structure of the Nerves, the Circulation of the Blood, and the mutual Rencontres of those Bodys which *Hippocrates* own'd, the Bitter, the Acid, the Sweet, and the Salt.

This is the part the Antients would have acted, if they had had the same helps we have; and this is the Method by consequence which their Followers ought to observe. Those zealous Disciples respect Antiquity; why don't they then respect Truth which is so antient? why do not they inspire Youth with the love of it, by reaching them nothing but Truth? Let 'em not imagin that they are allow'd to follow their Capricios in the choice of Opinions, and to impugn, *ex Cathedra*, Maxims uni-

universally receiv'd, to substitute false Maxims in their place, and to bring upon the Stage, to the shame of an Art wholly Divine, ridiculous Errors that Time hath already buried. A judicious Physician will despise all that is not of use for understanding the Laws of Mechanism; of those Laws, I say, which compose the whole Order, and upon which is founded the whole Oeconomy of the Animal Body. Being only addicted to the Experience of his Sense, he carries with him every where those faithful Witnesses: He examines with them what a firm or slight contexture of Parts, and what an uniform or tumultuous motion of Liquors may contribute on their part towards prolonging or shortning the Life. In Youth the firm Structure and solid Contexture of the Parts, with the lively Colour of the Skin, are visible signs of a perfect Health, and of a strong and vigorous Constitution. In old Age, on the contrary, the Weakness with which we are then overwhelm'd, will teach us the disorders that attend the Relaxation of the nervous Parts, and shew us that the natural Circulation of the Blood being once weakned, is the most immediate cause of Death.

In effect, when we are old, not only the Nipples of the Skin wither, and Wrinkles make Furrows in our Bodies; not only the Vaults of the Nerves sink, and a soft and loose Flesh disfigures the Members already de-

depriv'd of strength, but the Ligaments are relax'd, and a cold Humour, which falls upon the Joints of the Feet and Hands, there forms the Gout; the Fibres broke or weakned, can't any longer preserve to the Bowels their first solidity; the Spring or Motion of the Heart grows slower, the Body loses its action, all falls to decay, and the passage of the Blood is so stop'd up, that the Circulation lessens every day, and terminates at last with the Heat and Life.

When those Accidents happen by the unavoidable Laws of Nature, they approach only by degrees, and after a long course of years; but they come all of a sudden in the height of Youth, and in spite of a good Complexion, when they are invited by sensuality; I mean, when by the abuse of Pleasures the nervous Parts are weakned, when the Structure of them is disorder'd by the frequent shock of the Volatile Spirits, which by a forcible Irritation of the Fibres of the Membranes, pricking and tearing them, or strongly benumbing them, does at last dry them up and deprive them of their nourishing Moisture, which should water them like Dew. Now the most proper cause to produce all those pernicious Effects is, the immoderate use of Wine, Brandy, Opium, but chiefly of Tobacco, as we shall see anon.

III.

America being conquer'd by the *Spaniards*, triumph'd over the fierceness of its Conquerors, and inspir'd them with their own Manners. She hastened the Death of her new Masters, by the Present she made them of the Venereal Disease, and Tobacco; which speedily reveng'd her for her Servitude, and the Death of her Inhabitants: This Plant which we could have wish'd had continued always hid, is in the Country call'd *Picielt* and *Petan*, and in *Spain*, *Tabac*. It was brought home by a *Spanish* Fleet, which at the same time did also bring home a multitude of People sick of a scandalous Distemper. This Fleet did unfortunately spread those two Evils in our Country, and *Europe* felt her self immediately attack'd by a multitude of Diseases that were formerly unknown to her. The Tobacco, or rather the Seed that was sent into *Portugal*, by the care of *Nicot*, Ambassador to *Francis* the 2^d, and afterwards sown by the name of *Nicotiana*, grew as easily in our Climate, as the *French* Youth, who are so docile of any thing that's bad, were ready to abuse it. If we consider the Leaf and Root of that Herb, it resembles very much the small *Herbane*; but if we consider its Effects, it ought to be rank'd among the *Poppys* and *Nightshades*; nay it surpasses, for its Sulphur, and the dangerous Oil that is distill'd from it, the *Mandrake*, the *Solanum*, or *Mad-nightshade*, and

and the Thorn-Apple. However when it is us'd with prudence, it is to be valued for the great Advantages we reap from it, and ought to have place among the best Medicinal Drugs. Being put into the Nose, either whole or in Snuff, it gently pricks the Membrane, with which the Nostrils, and the little Bones that compose them, are covered. This Membrane does at the time grow straiter; and by the effect of several successive shakings, compress the Teats and Glands of which it is full, and draws out of them, as from so many Sponges, the superfluous Snout which is there gathered together.

This Excrement being purg'd, the Serosities have nothing to hinder their coming out; they follow the motion that is just impress'd, and like Water that runs through Cocks, issue in abundance from the neighbouring Vessels and Glands. It happens by the same tickling or pricking, that when we smoke or chew Tobacco, the Glands of the Jaws, and the Vessels for Salivation being continually mov'd, are forc'd to dismiss a great quantity of Spit-
tle, which carrys with it the Matter of the Defluxions. It communicates at the same time to the Membranes of the Lungs, a certain Impulsion that discharges them of a vis-
cous Flegm, the issuing of which many times cures the *Asthma*, the Cough, the Rhume, and several other Accidents:

Tobacco contains a Narcotic or stupifying Sulphur, by which it eases the Toothach. ¹⁸¹ It produces besides, by means of this Sulphur, such a Tranquillity in the Body and Mind, that we may look upon this Plant as the famous Herb mention'd by *Homer*, that had the Virtue to change Sadness into Joy; for Tobacco, by the power of its Sulphur, dissipates Grief or Heaviness, makes People sensibly happy in the midst of Poverty. It spreads agreeably in the Veins, makes us conceive quieting Hope, comforts the Mind, &c. Even those who want Necessaries, find something in Tobacco that makes them forget their Necessities: A Flegm that falls continually into their Stomach, makes them bear hunger easily; whether it be that that Flegm serves 'em instead of Food, or benums the Nerves of the Stomach, and makes them unsensible of Hunger.

Tobacco is not only proper for several Distempers within, but it likewise cures Ulcers without. It eats away proud Flesh, inclines the Sore to heal, and many times performs that which other Medicines could not do; but the same Causes which make it capable of so many good Effects, when we know how to use it seasonably, serve only to make it so much the more dangerous when it's abus'd: for since it has in it a Caustic Salt, by which it purifies Ulcers, and eats up the hardest Carnosities to the very quick; what disorders may it not occasi-

on,

on, if by using it to excess, it cometh with its sharp Salt to fret the tender and delicate Membranes? It cannot fail in such a case to raise Convulsions in the Nerves of the Throat and Stomach, and to shake all the Nerves of the Body. What Mischief will not the Spittle do which falls into the Stomach, if once charg'd with that Salt? It spreads its Acrimony over all, and mixing with the Aliments that ought to be converted into Chyle, is carried afterwards with the Blood through all parts of the Body.

The Narcotic Sulphur of Tobacco is no less dangerous than its Salt. It is true, that this Sulphur by the Numness which it causes in the Parts, stays, as we have observ'd, the most violent Toothach, allays the sharpness of Hunger, and so lulls the Senses and the Brain, that when once a Man is drunk with smoaking, he forgets his Cares, thinks himself happy, and is no more sensible of the Miserys of this Life, than if he had drank of the Water of that River which made Men forget every thing. But if we examine all those Advantages, we shall find they are not much to be relied upon.

IV.

That Man must needs have had a Health proof against most Dangers, who after having weather'd the horrible Symptoms which Tobacco causes at first, durst first continue the use of so dangerous a Plant: No doubt he had a mind to out-brave Death, when with-

out fearing the pernicious Smoke of the Pipe, he had the courage to suck in, with open Mouth, a Poison more dangerous than that of Hemlock. Nay, we may rather say that he must have had a Body otherwise made than that of other Men, to think himself above the Mischiefs which issued from that *Pandora's* Box, by the emission only of its Dust, or which with the Smoke of a Pipe go to carry their mortal Impression to the innermost Parts of the Body. In effect, what Assaults don't they suffer who begin to smoke? I know not what secret Poison is immediately felt within; the Stomach is immediately affected with Nauseating, turn'd up-side down with Vomiting; the Brain is attack'd by Vertigo's, the Head reels; the Eyes being darkned paint out no other Image but that of Death; the Body groans under the several extremes of Hot and Cold; the Heart being almost without action, refuses to the other parts the Blood and Spirits of which they stand in need; and that that is more deplorable is, the Memory, that precious Treasure, is the first Advantage that the Smoke of Tobacco deprives a Man of: so that to be initiated in all those black Mysterys, they must begin with the loss of the use of their Sense and Reason.

If after being awak'd from such a drowsiness, Men would consider how much all these Disorders are capable of altering the Principles

of

of Life, there is certainly no Person in whom the desire of Life would not prevail over a Passion for Tobacco. The Pleasure it affords is an Inchantment, which we must leave to those to whom Life is a burden, and have not wherewith to supply its Necessities. It is for Seamen and Souldiers to suck in the Smoke of Tobacco, as that by which they may disguise the Sorrows of Life. This lazy Exercise is only fit for those useless Mob, who seem to be born for no other thing but to consume the worst of the Earth's Productions: But a Man of Sense, who hath Education, good Breeding, and Health, to whom God hath given an Estate, and Wisdom how to use it, ought carefully to avoid that deceitful Charm, and never to infect his Mouth with the stench of a Pipe. If he have not conduct of his own thus to govern himself, he must suffer his Friends to reprove him freely, their Reproaches ought to work shame in him, and force him, as it were, from this Inchantment, tho he should even complain and say, that they kill him by endeavouring thus to deprive him of so sweet a Custom.

But if out of too much complaisance they leave him to the Mercy of Tobacco, not only his Reason, how spiritual and divine soever it be, will become deprav'd; not only the Body thus overwhelmed will overwhelm the Spirit, but being ruin'd already in the flower of its Age, and old before its time, will speedily

become a Prey to Death. These Advices will make no Impression upon those that are once bewitched by Tobacco: and if perchance there be some who will openly approve those Advices, and being resolv'd to break off from such a dangerous Habit, throw their Snuff in the Wind as so much Poison, yet they are no sooner alone, but they return to the Pipe and Tobacco-box, they again resume those fatal Tools with which they have already weakened their Brain and their Nerves; and as if in deceiving their Friends they did not deceive themselves, they return to their first practice as soon as they are from under the view of those that reprov'd them. What can be the cause of such a foolish Conduct, if it be not, that Sensuality, the Enemy of Reason, always hinders Prudence from acting; it puts out the Eyes of the Mind, and takes away from our view the Rules that we are to follow? It's the misfortune of those who are thus blinded, to fall in love with their own ruin, which is the greatest of all Mischiefs. Other Pleasures don't seduce us long, Discontent follows them close, and the time comes when instead of repeating them, we repent that ever we tasted them. It is not so in the pleasure that we find in Tobacco; it's a Charm that grows stronger every day, a Custom that changes into a Necessity, an Amusement at first, and afterwards a serious Business that can no more be dispens'd with. Then they look upon Tobacco

bacco as one of the surest Methods of prolonging Life; they think thereby to multiply the number of their Years, to live as long as *Nestor*, and to spend the rest of their days without any Distemper. They make themselves believe, that in diverting thus by the Mouth and the Nose all the superfluous Serosities that us'd to discharge themselves by insensible Transpiration, and other general ways, they consult their Health more than their Pleasure; but they take no notice that this continual distillation of Water by the Nostrils destroys at last the Organ of smelling.

The Nose is made for receiving Smells, as is plain by its Figure, and not to serve as a Drain for Humours, as other parts design'd for that use are made in form of Tunnels. It's Children and old Men that are naturally subject to those Distillations; the moisture of the former abounds so much, that they must of necessity issue at the first Vent; in the latter, the loosened Parts are like open Sieves, that being uncapable of retaining any thing, suffer the Phlegmatic Humour that they receive, to fall down upon the Nostrils and other Organs.

But for young People, unless they be subject to Defluxions, they ought never to have their Noses subject to those Distillations, for that Part in them discharges it self only of that which may cramp the Organ of smelling. It's then perfectly to oppose the Design of Nature,

ture, to dull, by the Narcotic Sulphur of Tobacco, and that Water which is drain'd by the Nose, the lively and delicate Sentiment of a Membrane design'd for receiving Smells, and to disorder, by a continual Serosity, the little Cells of that Organ, work'd with so much Art to retain the Particles which flow from odoriferous Bodys. To this let us add, that by the weight of the Humours which are forc'd to take this way, the Head, which is the place destin'd for the Functions of the Spirit, is made heavy; and that by placing a Sink thus in the most sublime part of the Body, they turn the Seat of the Soul into a House of Office. I confess, that sometimes it is proper when we rise, to provoke by a little Tobacco the issuing of the Snot that is amass'd in the Nose during the Night, and to purge by sneezing the superfluous Water that the neighbouring Glands are charg'd with. But when under this pretext they make a custom of taking this Medicine, they don't purge their Head but drown it, and in hope of arriving at a better state of Health, make themselves every day more infirm; and the Water being continually provok'd to flow, separates it self in such a manner from the Mass of Blood, that the Fibres of the Blood being depriv'd of the Humour that serv'd 'em as a Vehicle, are confounded together, lose almost all motion, and by this fatal repose occasion sudden Deaths.

These

These are the ordinary Consequences of the Evacuations that are procur'd by means of Tobacco.

The best of things become bad when abus'd ; those things which serve us for ordinary Food, and which by the conformity of their substance with ours, and by the proportionable mixture of their Principles, agree best with us, become to us so many sources of Mischief when we abuse them ; they are then chang'd into mortal Poison, which overturns, sometimes all of a sudden, the Principles of Life, and delivers us over to a speedy Death. Is not our natural Heat many times oppress'd by an excess of Wine, and of the best of Food ? It's the same with Smells ; being well husbanded, they please the Smell, and fortify the Heart ; but as soon as they are abus'd, they inflame the Blood, disturb the Brain, occasion Swoonings, and sometimes Epilepsies. With what madness then must Men be transported who abuse Tobacco in such a manner, that they not only take it more frequently, and in greater quantity than they take their most necessary Food, but are taking Snuff almost as often as they breath ? Hence it comes to pass that the Nostrils are always full of Tobacco, and by consequence that all the Air which enters the Lungs by the Nose, is mix'd with the Narcotic Sulphur, and Acid Salt of Tobacco. The Air being thus infected, infects
the

the mass of Blood with which it mixes. The Blood being fermented by the fiery Spirits imported by the Air, makes efforts to remove them, and finds it self the Victim of a thousand seditious Motions of which it is not the cause. The tickling occasion'd in the Nose by this fatal Herb, which hath so much triumphed over the Liberty of Mankind, that they are no more capable of dispensing with the want of it, may, with good reason, be call'd a *Second Venus*. But since the pleasure enjoy'd by the former is call'd by the Antients a *Short Epilepsy*, we may well conclude that that which is found in the use of Tobacco, is a long and almost continued Epilepsy: for the delicate Membrane of the Nostrils being incessantly tickled by the sharp Salt of this Pouder, conveys its motion as far as the Membranes of the Brain, and by a necessary dependance shakes all the nervous Parts of the Body, and all the Bowels. This happens so often, that at last the least occasion is enough to revive in those parts the motion to which they are accustomed. That the communication of the Membranes of the Nose with the Nerves of the Bowels, may be the cause of so many disorders, is a Fact that we can have no doubt of, after what we see falls out every day in the sudden Symptoms of the Hysteric Passion, and in those of Melancholy; since there's only wanting a small impression of an agreeable smell to make them return

return immediately like a Clap of Thunder, and any thing of an unpleasant smell diffuses them afterward with as much speed as they came. It's to this cause we ought to ascribe the Indisposition so much known at this day by the name of *Vapours*; and which the Vulgar, who take very little care in examining their Opinions, do falsely ascribe to Fumes which rise suddenly from the lower Parts of the Belly to the Brain; for there is no passage by which those pretended Vapours can rise from that place to the Head, to produce those sudden Tempests which shake all the Nerves of the Body. It is not then to Fumes, that is to say, to Convulsive Motions, that we ought to ascribe that Tumult of the Bowels; that is to say, that the Fibres and Membranes of which the Bowels are compos'd and sustain'd, coming to be oppress'd by some Acid Humour, or to be wrinkled by the sharpness of some sour Moisture, or to be put in agitation by some corrupted Spirits that hurt them, contract themselves, and by a successive shaking communicate their Convulsive Motion, not only to all the Membranes of the other Bowels, which have a correspondence by the connexion of the Nerves, but even to the *Meninges* which they shake with violence, and by consequence to the Brain which they compress, by the contraction they make there of the Teguments which cover it. Then since those Symptoms are occasioned
much

much more easily in these parts, that several preceding Irritations have already dispos'd to a Convulsion, it is easy to comprehend that the continual Emotion in which the frequent use of Tobacco keeps the Parts, may so dispose the Nerves to Convulsive Motions, that the least occasion, either of a pricking Humour, or of a fine Smell, will be capable of producing those Convulsive Motions that are called Vapours. The parts being thus agitated by so many repeated Convulsions, are loosened at last, lose their Spring, and the Fibres that compose them suffer so many contrary Motions, contract and extend themselves so often with force, that they soon break, they fall one upon another, the little Cavities of the Tunnels cannot keep up any longer, the Vaults sink, the Pores stop, the Ways that were open before begin to shut, and scarce suffer either the Blood or the Spirits to circulate any more. This disorder makes the Parts incapable of repairing by a new Substance that which they lose every day. The Blood that issues out of the Arteries cannot enter with its usual freedom into the Veins. Then the Members being depriv'd of Nourishment, sink under the weight they are no longer able to bear, and the infebled Body falls into an universal decay. We may add to this, that most of the Fibres of the Nerves being stupified by the Narcotic Vapour of the Tobacco, with which they are fill'd,

fill'd, lose almost all sense, and grant no more free passage to the Animal Spirits: for as the Sulphur of Opium dissolves it self equally in Oil, in spirituous Liquors, in salt Things, and in Waters which distinguish it from other Sulphurs; in the same manner the Sulphur of Tobacco, being much of the like Nature, entering into the small Passages of the Nervous Fibres by means of the Salts which fix it, is dissolv'd there by the Water or Spirit it meets with, from whence 'tis easy to comprehend that the separated parts of the Sulphur, disingaging themselves from the Salt, are consequently confounded one with another, and stop the Passages where they are. It happens from thence, that the Animal Spirits cannot make their way across those Sulphurs, unless there come a quantity great enough of Spirits to force the Obstacles. But if the Narcotic Vapours follow without ceasing, if they always succeed one another; it's certain they will so stop the passages of the Fibres, that the Animal Spirits, how much soever they abound, can find no more entrance there; and that the stupified Nerves can no more be reviv'd. Hence it is that most young People, who take too much Tobacco, are in their very Youth seiz'd with trembling, their unsteady Hands don't act with the same vigour, their staggering Feet seem to refuse to carry the weight of their Body. The noble parts wither, the
spiral

spiral Fibres of the Heart have almost no play, or only by Sallies ; the Contexture and Frame of the Parts is broken, or loosened. Thus the living Machine is gradually destroy'd, its Motion, without which it cannot subsist, is weakned more and more ; so that Death, which, without the immoderate use of Tobacco, would not have been so sudden, comes with a hasty stroke to finish a Life that was but just begun.

Then the frequent use of Tobacco shortens the Life.

A Letter from Mr. George Baglivi, Fellow of the Royal Society at London, and of the Academy of Sciences in Germany; Doctor of Physic, and Professor of Anatomy in the College of Wisdom. Written from Rome to the Author on the Subject of WORMS.

S I R,

“ **N**othing was more acceptable to me
 “ than your most courteous and elegant Letter. I always lov’d and
 “ reverenc’d the Learned *Antonius Albertus*, for
 “ the extraordinary sweetness of his Temper,
 “ and his great Fidelity and Kindness to me;
 “ but now I love him more and more, he’s
 “ continually in my mind, tho he be far distant
 “ from me: For besides the innumerable
 “ Kindnesses that I am indebted to him for
 “ already, he does not cease to confer new
 “ ones upon me every day; such is his Courtesy.
 “ And I think his kindness in making
 “ me acquainted with the Learned *Nicholas Andry*,
 “ the French *Æsculapius*, is not to be
 “ numbred amongst the least.

R

“ Most

“ Most Learned *Andry*, your Letter was
“ truly acceptable to me; but the cause that
“ put you upon writing to me was yet more
“ grateful: For I take it to be your great
“ kindness to me that induc'd you to read my
“ Works, and to ascribe to me something,
“ nay so much in Med'cine as I always
“ wish'd for, but never thought I should at-
“ tain to. But now if you, who are one of the
“ most famous Physicians in *France* for Au-
“ thority and Learning, do think so of me, I
“ almost call into question my own Judg-
“ ment, nor do I altogether dare to despise
“ my self, lest I dissent from you; and I will
“ endeavour much more diligently than here-
“ tofore, that I may arrive, as near as I can,
“ to that height to which you think I have
“ already attain'd, that one time or other you
“ may have occasion to say truly, what now
“ perhaps you say merely out of civility.

“ I mightily rejoice that your Treatise of
“ *Worms*, back'd by Observations and Experi-
“ ments, will speedily be publish'd at *Paris*,
“ the Subject being altogether new, and treat-
“ ed of by few in such a Method. I am con-
“ fident that it will conduce to advance your
“ Praise and Reputation. Go on then and fi-
“ nish, as soon as possible, your Work that is
“ so exceeding necessary for the public Wel-
“ fare.

“ With your Letter I receiv'd the Cut of a
“ flat Worm, several Ells in length, which
“ you

“ you brought away from a Man of about
“ thirty years of Age, that labour’d under a
“ Pleurisy, and *Delirium*. Because this sort of
“ Worm doth not frequently occur in prac-
“ tice, you ask me four things concerning it :
“ 1. If it proceeds from an Egg ? 2. From
“ whence it hath so great a length ? 3. Whe-
“ ther the Patients have it from the Womb, as
“ *Hippocrates*, the Father of Physicians, ob-
“ serv’d ? Finally, If it be frequent at *Rome*,
“ as it uses to be in *Holland*, or whether it be
“ rare as in *France* ? You enquire likewise,
“ Whether the Experiments related by me in
“ my *Praxis Medicina*, lib. 1. concerning
“ *Worms*, related to Earth Worms, or Hu-
“ man Worms ? I will speak of each of them
“ briefly according to my capacity.

“ The beginning and original of all Ani-
“ mals and Vegetables is from an Egg ; for
“ what else are the Seeds of Plants but Eggs,
“ in which all the Rudiments of the future
“ Plant are contracted, as it were, into a
“ short Compendium ; and those, by virtue of
“ the Fermentation of the nutritive Juice, by
“ the Elastick Power of the Air, and the
“ double warmth, one of the Sun, and the o-
“ ther of the central warmth of the Earth,
“ the great Mother of all, are uncovered by
“ little and little ; and their Fetters being as
“ it were loos’d, they grow and arrive, in
“ due time, to such a bulk, as great as is al-
“ lotted to every sort of Plant by the Laws of
“ Nature:

“ If all Philosophers and Physicians think
“ thus concerning Vegetables, how much
“ more must they think so concerning living
“ Creatures, not only of those that are cal-
“ led *Perfect*, but also of the *Imperfect*,
“ which are commonly call'd *Insects*? For
“ besides that there is the same equal Order in
“ all things, and that all come from one Prin-
“ ciple, and after a certain general Circuit,
“ end all in one again; *Insects*, by an admirable
“ connexion and construction of Parts, and
“ by a more noble exercitation of vital O-
“ perations, do not only in no wise give
“ place to Plants, but in that matter far excel
“ them. Wherefore since no Man says that
“ Plants rise from Putrefaction, they ought
“ not in reason to deduce the Original of *In-*
“ *sects*, and other baser Animals from thence.
“ For it is a shame to Philosophers and Physi-
“ cians, in this most happy Age of Sciences,
“ wherein the Causes of things are illustrated
“ by Experiments and solid Precepts of the
“ Mathematics, to ascribe to the fortuitous
“ chance of Putrefaction, that which the con-
“ stant and perpetual Law of Nature remain-
“ ing in its Seeds, rules and directs.

“ For it is not Putrefaction that produces
“ imperfect living Creatures, but the heat
“ and fermentation of the things putrefying,
“ that makes fruitful the Seeds of things spread
“ all over the World, if I may be allowed so
“ to speak; or rather it stirs up and revives
“ the

“ the imperceptible Parts of the future living
 “ Creature in the Egg, and, as it were, in-
 “ spires 'em with the first Life, in the same
 “ manner with the heat of the Sun, or that of
 “ breeding Hens.

“ What we have said before of Insects in
 “ general, may be rightly applied to the
 “ Worms bred in Human Bodys, seeing they
 “ are not generated by putrefying Humours,
 “ *κακοχύλοις*, as the *Pseudo-Galenists* common-
 “ ly think; but the Worms Eggs lying hid
 “ in the Intestines, are enliven'd and brought
 “ forth by the same means.

“ Therefore the flat Worm derives its O-
 “ riginal from an Egg of its own kind: and
 “ as there are singular Propertys in all things,
 “ from which they cannot deviate in the
 “ least because of the inviolable Laws of Na-
 “ ture; so the flat Worms, by their own Na-
 “ ture, use to breed in the *Fætus* whilst yet in
 “ the Womb, and by degrees grow by little
 “ Circles, until they equal the whole length
 “ of the Intestines. They don't arrive to
 “ their full length till after a course of many
 “ Years; for the Particles of this Insect in-
 “ creasing by little and little, those that are
 “ already increas'd, are manifested by de-
 “ grees.

“ Nor is it strange that they acquire not
 “ their full growth till so long a time, for it's
 “ customary in Nature, as we see in the
 “ Sperm of an Egg, the Seeds of Plants, and

“ in the growth of Vegetables, first to draw
 “ the Lineaments of Parts, namely, little
 “ skinny Bags, which afterwards it fills with
 “ a delicate moisture, and makes to appear in
 “ the appointed time: for the Matter con-
 “ tain'd in the little Bags is incrassated, and at
 “ the same time form'd and defended by
 “ the Skin that surrounds it; and so, accord-
 “ ing to the order of Nature, the Bowels and
 “ all the Parts are form'd, each in their own
 “ time, either shorter or longer, according to
 “ the Nature of the Animals and Vegeta-
 “ bles.

“ The admirable Metamorphosis of Silk-
 “ worms, Ants, and other Insects, confirm
 “ this Opinion; for their Wings, Stings, and
 “ the various parts of their Bodys, altho
 “ they were extant before, don't shew them-
 “ selves to us but by little and little, and in
 “ due time.

“ The Seeds of Teeth lie hid in the Gums
 “ for many Years, like as the Curls of Hair
 “ lie hid in their Root under the skin, until
 “ at length the necessary maturity drawing
 “ on, they break forth, as it were, by Vege-
 “ tation. So likewise this Worm's great
 “ length, altho it be contracted in the Egg
 “ to a sort of Compendium, yet it doth not
 “ appear until it hath attain'd its due measure
 “ of maturity.

“ This gives us to know, that the incredi-
 “ ble length of this Insect is not owing to the

“ abun-

“ abundance of its Food, as some falsely ima-
 “ gine; but to its peculiar Properties that di-
 “ stinguish it from all other Worms. For if
 “ a Pigmy, for instance, should feed never
 “ so high, ’twill still continue a Pigmy.

“ You further ask, Whether the Children
 “ bring this Insect along with ’em from their
 “ Mothers Womb, or not. *Hippocrates*, the
 “ great Standard of Physic, gives his Opini-
 “ on for it in his 4th Book of Diseases, as you
 “ have well observ’d: And for as much as
 “ that great Man’s Precepts are back’d by Na-
 “ ture’s Laws, I would not depart from his
 “ Sentiments upon slender grounds; or if I
 “ differ from him, it shall not be from the
 “ influence of frothy Reasonings, and imagi-
 “ nary Hypotheses (which I am proud to de-
 “ spise) but from my own Experience made
 “ steady and infallible by a continued Series of
 “ just Observations. Now there being sever-
 “ al Hereditary Diseases which commence in
 “ the Mother’s Womb, why may not the
 “ broad Worms be reduc’d to the same foot,
 “ especially since the sacred Authority of *Hip-
 “ pocrates* is on that side?

“ That Author tells us, in the place I que-
 “ red but now, that this Worm is bred in the
 “ Fetus, when the superfluous abundance of
 “ the Mother’s Milk and Blood occasions its
 “ corruption. Now this Advance, as I take
 “ it, is highly reasonable; for several Modern
 “ Observations do plainly make it out, that
 “ the

“ the Child in the Womb sucks a milky
“ Lymph; and the putrefying Fermentation
“ of that Lymph rouses and animates the hid-
“ den Eggs of those broad Worms, which
“ the corruption of other things is not able to
“ compass.

“ And, as I take it, the reason why this
“ sort of Worms is more common in *Holland*
“ than in other Countrys, is, that it abounds
“ in Milk, and its Inhabitants feed mostly
“ upon Milk and Cheese. In the Year 1696,
“ I knew a young Man at *Rome* that was
“ twenty Years of Age, very pale and mea-
“ ger, a great spitter, and very intemperate
“ in the use of Milk, and all its Productions.
“ One day, as he was cutting an Onion with
“ a Knife, the smell of it did so disorder him,
“ that he was almost choak'd, and thought
“ verily he should have dy'd, if a Vomiting
“ had not seiz'd him, by which he threw up
“ a Worm thirty foot long gather'd into a
“ round Ball, and thereupon recover'd.

“ I dare not be positive whether broad
“ Worms may not likewise breed in adult
“ Persons, as having no Experience to direct
“ my Judgment: However I do not reckon
“ it impossible, tho *Hippocrates* did not ob-
“ serve it in his time.

“ To form a clear and regular Judg-
“ ment of this perplex'd Matter, we must
“ heedfully mind whether the Patient had
“ any Symptoms of broad Worms from his

“ In.

“ Infancy, or whether their first appearance
“ is of a later date. In the first case we may
“ certainly ascribe their first Original to the
“ Womb: In the last we may conclude they
“ were not bred till long after his Nativity;
“ for I cannot easily imagine that a Child
“ should carry one of these Worms in its
“ Guts from its Infancy, without being in-
“ fested by the Symptoms that accompany
“ it.

“ Now these Symptoms are, a pain about
“ the Liver upon an empty Stomach, a con-
“ tinual spitting; and in the extremity of
“ pain, a privation of Speech; the Belly is
“ seiz’d with gripings; the Patient is pale,
“ weak, and lazy; sometimes he loaths
“ Victuals, and sometimes has an unrea-
“ sonable Appetite; little pieces of Worms
“ are voided in the form of Cucumber-seeds;
“ which being the genuine Fragments of the
“ broad Worm, are look’d upon as its pecu-
“ liar sign by *Hippocrates*, and the Learned
“ *Dordonaus*.

“ The broad Worm is not so frequent in the
“ City of *Rome*, and almost all over *Italy*, as
“ it is in *Holland*; by reason that the *Italians*
“ do not live in a moist, marshy, and cold
“ Country, and perhaps are more temperate
“ than the *Hollanders*, for there is not a great-
“ er Antidote for Worms than Sobriety.

“ I remember a Boy at *Rome*, four Years a-
“ go, voided a live Worm twenty foot long;
“ which

" which would have prov'd much longer if
 " the Mother had not broke it.
 " The Boy was pale and very weak. At
 " the same time a Woman being taken ill of a
 " Fever, with a violent Pain and a Tumor
 " in the Region of the Liver; I order'd her
 " to be bled, but to no purpose: then I or-
 " dered the place affected to be anointed with
 " the *Oil of Wormwood* by Decoction. Soon
 " after she was seiz'd with a Vomiting and a
 " Looseness, and voided a hundred *Ascarides*,
 " and so became well. Fifteen days after all
 " the Symptoms appear'd afresh. Being still
 " suspicious of Worms, I order'd three hand-
 " fuls of *Roman Wormwood* to be bruis'd and
 " applied to the Part affected; whereupon she
 " voided fifteen Worms, and recovered.
 " This Pain about her Liver, I did not take
 " to be directly seated in the Liver, but in the
 " Gut Colon that lies just by it. *Spigelius* and
 " *Sennertus* have several Observations of this
 " broad Worm: The latter has likewise se-
 " veral things relating to the *Navel Worms*,
 " and the *Crinones* lodg'd under the Skin. *Pa-*
 " *narolus* tells a story of a Patient, that in the
 " time of an Epidemical Malignant Fever,
 " voided thousands of live Worms, some of
 " which had Beaks, others were rough, and
 " others again resembled Cucumber-seeds.
 " The Experiments I made and inserted in
 " the first Book of my practice, do not relate
 " to Earth-worms, but to those in Human Bo-
 " dys.

" dys. A Woman fifty years old being seiz'd
 " with a Fever and Dysentery here in Rome,
 " in the year 1694, voided about three hun-
 " dred Worms of the length of a French-
 " bean, and in form resembling Cucumber-
 " seeds. Some of these being put into the
 " Spirit of Wine, and an Infusion of Worm-
 " seed, died in five hours time: but they liv'd
 " nine hours in Wine, and in the Solution of
 " Aloe, and that of the Extract of Germander,
 " and that of the Extract of Tobacco. Some
 " of 'em were put into the Oil of Sweet-Al-
 " monds, some into the Juice of Limons, some
 " into a Vessel half full of Mercury, and some
 " into the Water of Tettucium, which is a
 " Mineral Water impregnated with much
 " Salt, as Thursday at nine a Clock at Night;
 " and on Friday Morning I found those in the
 " Oil of Sweet-Almonds alive, but very weak
 " and inactive; those in the Tettucium-Wa-
 " ter, and in the Vessel with the Mercury,
 " and in the Juice of Limons, were brisk
 " and very active: Only in the Vessel with
 " Mercury they avoided the Mercury, and
 " endeavour'd to reach the brim of the Vessel.
 " Some being put into Orange-flower and Rose-
 " water, died of violent Convulsions after
 " eight hours. So much for the Worms.

" I am infinitely glad that France (which
 " never wanted famous Men) do's now fur-
 " nish Men of Parts and Ingenuity, at a time
 " when the Practice of Physic sinks under
 " Specu-

" Speculations and fictitious Hypotheses;
 " who join with me in owning, that the only
 " way to retrieve and keep it up, is to con-
 " temn the arrogance of new Opinions, and
 " to have recourse to *Hippocrates*, the true Pi-
 " lot that steers the right Course, and so learn
 " the ways of Truth from Nature's Interpre-
 " ter.

" Last Year I was made a Member of the
 " Royal Society in *England*, as you see by
 " my *Programma*; and at present I am one of
 " the *German Academy*, which I know will
 " be welcome News to you. I have just
 " now wrote to our dear Friend the Illustri-
 " ous *Antonio Alberti*; pray tell him so much.
 " Farewel the Eye of *France*; and for the
 " sake of the Public Good, pray take care of
 " your own Health.

Dated at *Rome*, July 14. 1699.

Some

Some particular Observations.

TOWARDS the latter end of *August* 1699.

I was call'd to visit a Lady that had been ill of an *Epilepsy* for six months. Her illness was occasion'd by a Fright, as her Parents told me. After a mature examination of all the Circumstances, I concluded the only way to cure her, was to give her Med'cines against the Worms, and made a Prescription accordingly. Presently the Parents were startled, and thought it was a Maggot to prescribe Med'cines against the Worms, for a Disease that ow'd its rise to a Fright. And a certain Quack, that had engag'd to cure her, was not wanting in railing against this Method, and perswaded the Parents to carry her into the Country along with him. But the Child growing worse in the Country, the Quack was dismiss'd, and they resolv'd to try my Remedy; not so much out of any great hope of success, as that they might satisfy their Minds in having tried all Methods. After the Patient had taken the Remedy, she voided a great many Worms, and several days past without the invasion of the Epileptic Paroxysm. Then the Father writ me a Letter,

signi-

“ Speculations and fictitious Hypotheses;
 “ who join with me in owning, that the only
 “ way to retrieve and keep it up, is to con-
 “ temn the arrogance of new Opinions, and
 “ to have recourse to *Hippocrates*, the true Pi-
 “ lot that steers the right Course, and so learn
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signi-

254 *Particular Observations.*

signifying his being amaz'd, that a Disease coming by a Fright should be caus'd by Worms. I writ him an Answer, in which I shew'd that such a thing was not unprecedented. Since these two Letters confirm a matter of Fact of such importance and use to the Practice of Physic, I thought it not improper to insert 'em here. As for what follow'd; I have now receiv'd advice, that the Child is perfectly well, and stood in need of no other Remedy.

A Letter to the Author.

“ I Know not, Sir, whether I should boast
“ of the Victory ; but since the taking of
“ your Potion, she has had six days clear of
“ her Fits : You know that it has expell’d a
“ great quantity of Worms. I bled the
“ Child at the time prescrib’d, and look’d
“ upon some drops of the Serum of her
“ Blood in a Glass, holding it between me and
“ the Sun, pursuant to your Orders, and
“ found some little and almost unperceivable
“ Worms in it. All this, I must own, goes
“ beyond my Capacity : I cannot conceive
“ how the Worms should be an effect of Fear.
“ I have turn’d off my Quack : He had reason
“ to say, that at last I would find, he had a
“ fine *Arcanum* ; for tho he had none for cur-
“ ing my Daughter, I must say he had an ad-
“ mirable one for pumping Money from me.
“ Pray let us know what Method we must
“ follow to prolong our Joy : We’ll obey
“ your Orders nicely.

“ A certain Lady, a Friend of ours, that
“ had some Secrets given her, told me, that,
“ if my Daughter relaps’d, I had nothing to
“ do, but to take an After-birth, and dry it,
“ and give her a dram of the Pouder, which
“ would

“ would expel all the Worms. She commu-
 “ nicated this Secret to me, as being a thing
 “ of singular and unknown Virtue. Be so
 “ kind as to let me have your thoughts upon
 “ it, for I depend entirely upon you. The
 “ Apothecary that furnishes the Med’cines,
 “ sent me word that your Mixture might be
 “ improv’d by the addition of the Water of
 “ *Cardus Benedictus*, and that he believ’d you
 “ would not be against it. Moreover, with-
 “ in these three or four days, methinks my
 “ *Asthma* begins to recoil upon me : I’m ad-
 “ vis’d to some drops of the Spirit of *Wine* in
 “ a little Water to be taken in a Morning for
 “ attenuating the Blood and Humours, and to
 “ avoid Salt and all salted things, because, they
 “ say, Salt thickens the Blood and hinders it
 “ from circulating.

“ Madam is resolv’d to follow your
 “ Advice, and to suffer no body to touch her
 “ Breast. The story of Madam *Le*
 “ has made her more afraid of the Quacks
 “ than ever. I am told, what I did not know
 “ before, that that Woman that took Ma-
 “ dam in hand, pretended to oblige
 “ her to pay a considerable Sum, alledging
 “ she had cur’d her ; and that Madam *Le*
 “ *R* to get clear of the Quack Doc-
 “ tresses Suit, was oblig’d to have your At-
 “ testation of the wretched Condition her
 “ Doctress had brought her to. I have heard
 “ that some time before, a Counsellor, that
 “ in

“ in all probability wanted Business, admini-
“ nistred Med’cines to her, and that he was
“ the first that caus’d her Breast to be open’d.
“ If you know the names of the one and the
“ other, you’ll oblige me in acquainting me
“ with ’em; I have some reasons for knowing
“ them. I send you here enclos’d a *Recipe*
“ that a Physician gave to a Friend of mine
“ for the Worms, and was communicated to
“ me as a *Nostrum*. There are News here,
“ that the Son of Monsieur M. Advo-
“ cate to the Parliament, is dead of Worms;
“ and that you being call’d a few days before
“ his Death, prescrib’d a Med’cine that ex-
“ pell’d a great many Worms, but was call’d
“ too late to perfect the Cure. Mr. de
“ is very much concern’d at his Death, which
“ has carried off a very honest Gentleman,
“ that he had a great esteem for,

I am, Sir, &c.

A Powder against the Worms in Epileptic
Children.

Take of Rhubarb and Agarick, of each a Dram;
prepar'd Esula, a Scruple; the Herb Corallin and
burnt Hartshorn, of each half an Ounce; Myrrh,
Zedoary, and Tansey-flowers, of each a Scruple;
Salt of Wormwood and Salt of Tartar, of each
half a Dram; reduce all to fine Powder, to which
add a little Sugar. Dose, from a Scruple to a
Dram, according to the Child's Age.

The Author's Answer.

SIR, I am infinitely glad to hear that the
Medicine succeeded. You must repeat it
the next day after you receive this Letter:
then intermit three days, and repeat it again.
It is very proper to continue the ordinary Re-
gimen, and above all, to take care the Child be
not frighted. People think to keep Children
in awe by putting them in fear, by which
means they do a mighty injury both to Body
and Mind: for if frightening 'em at that rate
do's not always throw 'em into sickness, it
never fails to sink their Reason. You must give
the young Lady a little more liberty, and or-
der

der her Governess not to threaten her so hard, when she's guilty of any mistake in reading, but to treat her gently, and to check her without Passion; sometimes to laugh over her very faults, and above all, to interlace her little Lessons with some relentment when she's weary of 'em, and to bring her back to her Book by insensible Methods; and in a word, to make her exercises a Diversion to her. By this Conduct we give spirit and life to Children, and instruct 'em without rendring them Melancholy. If you'll take care, Sir, that our little Patient be thus manag'd, you need not doubt but our Remedies will perfect her Cure.

As for your surprizal, that an Illness coming by a Fright, should take rise from Worms: if you mean that you cannot conceive how that comes to pass, you're in the right of it, for it is not easy to find a reason for it: But if your surprizal is only occasion'd by your fancying it to be unexampled, you must correct it,

* *Thomas Cornelius*, a learned Citizen of *Consentium* in *Calabria*, says, he saw a little Girl, that, after a Fright, of which she thought to die upon the spot, fell insensibly into a decay, became pale, and subject to pains in the Breast, and afterwards to *Epileptic* fits, and at last, after a great deal of Torment died: He tells you,

* Thom. Cornel. Consentin. Progymn. de Nutricat. Prog. 6.

they open'd her Corps, and, after a narrow enquiry, could find no other cause of her Death, but the Worms, that had gnaw'd the vessels of the Heart. That Author remarks that Fear has the same effect upon other Animals. A Sterlin that was kept in a House, being still pursued and plagued by the Children, became subject to Convulsions, which made it fall from off a high place. *Thomas Cornelius* says, he had the curiosity to open this Fowl, and found the bottom of its Heart overrun with Worms. He adds, that this put him upon making the Experiment upon Chicks, and trying if fear would likewise produce Worms in them. Accordingly he scar'd and frighted several Chicks for some days, and afterwards open'd 'em, and found in every one of 'em large Worms about the Heart.

This, Sir, will give you occasion to make several Reflections, and at the same to take heart, since these Observations furnish us with a shrewd presumption, that the Lady's illness is occasion'd by Worms, and consequently that we have reach'd the cause of her Distemper; from whence you have reason to expect a compleat Cure.

As for the Remedy recommended to you by the Lady of your acquaintance, it is not so great a Secret, for several Authors have it; only they join *Aloe* to it, and add this *Proviso*, that it should be an After-birth of a first Child.

I cannot say upon my own Experience what efficacy it has, for I never try'd it. But I know that *Lake Tozzi*, * now Physician to the Pope, asserts us he cur'd a young Man with that Medicine, and brought forth a very long broad Worm. The Remedy is easily come at, and we may try it if we have occasion; but I hope we shall have none. However I will not be positive till eight days hence.

As for what the Apothecary tells you, I have nothing to say but this, that you would do well to avoid mixing the Water of *Carduus Benedictus* with that already prescrib'd. 'Tis true, the vertues of the two Waters are pretty much of a piece; but sometimes two things having the same Quality in a separate State, lose it when they're mix'd. The Oil of *Vitriol*, and the Oil of *Tartar*, one of which is very acid, and the other sharp, being mix'd together lose their edg, and become an insipid Liquor. Thus do mixtures sometimes overturn all: and the ablest Physicians have always been careful to avoid 'em. † *Boetius de Boot*, Physician to *Rodolph II*, was so nice upon this point, that to eight Grains of *Bezoar* and one Ounce of *Sorrel-water*, which he us'd to give in malignant Fevers, he never durst join any other Water whatsoever: nay, after the exhibiting of that Medicine, he would

* *Lake Tozzi* Neapolit. in Hip. Aph. comm. lib. 2. aphor. 21.

† *Boetius de Boot*, de lapid. & gemm. lib. 2. cap. 193.

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not allow the Patient to drink any thing for the space of an Hour : for fear that another sort of Liquor, tho of the same vertue, should thwart or weaken the action of the first: for in fine, says he, sometimes there are secret contrarieties in things that scape our view, which are the reason that Remedies, which by themselves would produce the desired effect, fall short of it, when mingled together.

You tell me, you are advis'd to *Spirit of Wine* for your *Asthma*, because, say they, it attenuats the Blood and Humours. I do not know, Sir, who gave you so fine Counsel; but if he be one that pretends to Physic, you'll suffer me to tell you, that he meddles in a Science he do's not understand. The *Spirit of Wine* attenuats the Blood and Humors just so far, that if you inject two Ounces with a Syringe into the jugular Vein of a Dog, in a Minute's time you'll his Lungs stuff'd with clots of congeal'd Blood. The *Spirit of Wine* thickens the white of an Egg. If a few drops of it be held in the Mouth, it coagulates the Spittle, and makes it look like Glew. And this is its attenuating the Humors. Beware, Sir, of taking the *Spirit of Wine*, for your *Asthma*, which takes rise from a viscid matter in the Lungs. Indeed the use of the *Spirit of Wine* and Brandy is good for those who are much fatigu'd, because by thickning the Humours it prevents the excessive dissipation

tion of the Spirits, that the fatigue occasions.

You are further advis'd, you say, to avoid Salt, as being a thickner of the Blood. Another piece of ignorance! Salt is so far from thickning the Blood, that throwing Salt into Blood drawn out of a Vein, hinders its Coagulation: Upon which Account we use to throw Salt into the Mouths of Apoplectic Persons. The Blood it self is Salt, and 'tis only by virtue of its Salt that it keeps up its fluidity in the vessels of the Body: and the occasion of its curdling when it is drawn out of the Body, is the evaporation of its saline Spirits. In dissecting a living Animal, if we hold a Candle near to it, these Salts which evaporate in great Crouds, will sometimes make a sparkling in the flame of the Candle, just as if you had thrown Sea Salt upon it. This I have seen several times; and George Baglivi, Professor of Anatomy at Rome, says, he has observ'd it in dissecting a Greyhound. I remember to have seen the same effect, upon holding a Candle just over the porringers of Blood new drawn from a Patient, because then the steams of the Blood have a freer access to the flame of the Candle. As soon as this Salt exhales, the Blood curdles, and loses all its saltiness; whereas, while it is fluid, it tastes saltish upon the Tongue. Thus, Sir, you see Salt preserves

the fluidity of the Blood at all rates: and therefore whoever dissuades you from Salt (which indeed is not good for you) upon the plea of its thickning the Blood, is a Man that do's not understand what he advances.

I am glad, Madam is at length resolv'd not to meddle with her Cancer, and that the exit of Madam *de* has made her afraid to venture. The Story of the Counsellor, and the Woman that took in hand Madam is just as you have it. As for the Certificate they requir'd of me, I did not rely upon my own Judgment, but call'd *M. Berger*, Dean of our Faculty, to consult with me, who was as much surpris'd as I, to see a Breast given in as cur'd, that was all over ulcerated and render'd absolutely incurable. We jointly drew up her case in Writing, and sign'd it.

With reference to the Son of *M. de* Advocate to the Parliament, you are still inform'd. For he dy'd of a Dropsy. I was call'd on the 13th of August, to a Consultation with *M. Marteau* and *M. Daul*, both famous Physicians; but neither they nor I had any such ridiculous suspicion of the Distemper's being occasion'd by Worms. The Case was too plain, to leave us in suspense upon that Point: the Story of the Patients voiding Worms, by vertue of Medi-
cins

ons given for the purpose, is fabulous. He voided no Worms, and I order'd no such Remedy. The Conduct of *M. Marteau*, and *M. Duval*, was so wise and cautious, that it had been temerity in me to have offer'd any Addition or Alteration. Such Persons as ascribe such Wonders to me, that I never did, do not at all oblige me. And I'll always take care to clear my self of what good they shall speak of me, when I find it not conformable to the Truth.

I have look'd upon the *Recipe* that was given you. I admire that People should make Secrets of things that are to be met with elsewhere. You may give that Physician to know, that his whole *Recipe* stands entire, word for word, in *Nº. 3.* of the 5th Chapter of the second Book of *Matthias Vntzerus* his Treatise of the *Epilepsy*. I do not pretend to depreciat the Medicine upon that Account, for it is of admirable use against Worms: only I cannot abide to see common things turn'd into *Nostrums*. I perceive, your fears of the young Lady's Relapse, put you upon gathering all the Receipts you can hear of: but if she continue eight days more clear of the Paroxysm, as I hope she will, assure your self there's no danger. It remains, that I congratulate your Happiness in being rid of all the Quacks: for these are a sort of Vermin

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min more difficult to be expell'd, than those
that Physick encounters with Remedies. I am,

S I R,

Your most humble

and obedient Servant.

A

ANDRI.

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